2.0 AFFECTED ENVIRONMENT

There are no changes in this section of the Final Environmental Impact Statement and Section 4(f) Evaluation (FEIS) from those presented in the *Supplement to the Draft Environmental Impact Statement and Section 4(f) Evaluation (SDEIS)*, except as noted by the use of boldface type. The changes are primarily editorial except for the addition of text in Section 2.12.3.1 related to the Hine's emerald dragonfly and in Section 2.11.3 related to wetlands.

2.1 General Study Area

The general study area includes three of the six counties of the Greater Chicago region -Cook, DuPage, and Will counties (see Exhibit 1-1). It includes the western portion of Lemont Township in Cook County, the southern half of Downers Grove Township in DuPage County. The general study area also includes parts of Homer, DuPage, Lockport, Joliet, and New Lenox Townships in Will County (see Exhibit 2-1).

2.2 Transportation Facilities

2.2.1 Roadway Facilities

2.2.1.1 Existing Roadway Facilities

As shown in Exhibit 1-1, the highway system in the Chicago area is primarily radially oriented to downtown Chicago. The exceptions to this orientation are Interstate Route 294 circling the entire Chicago area 15 miles west of downtown Chicago and the combination of Interstate Route 355 with Illinois Route 53, which only spans DuPage and Cook Counties. Without a circumferential highway, oriented from the project area to the employment centers in DuPage County and northwest Cook County, most commuters going north must travel the local system to connect to Interstate Route 355. Furthermore, the Des Plaines River forms a major transportation barrier. The only north-south crossing of the Des Plaines River in the project area is Lemont Avenue and even the east-west crossings are limited (the 135th Street bridge was closed in 199**0** as deficient).

Interstate Route 55 and Interstate Route 80 are the two major trunk arterial highways located within the project corridor. Since both of these facilities provide for travel basically only in the east-west direction, there is a lack of a major north-south arterial highway system in the project corridor. This deficiency is compounded because there are no continuous north-south roads in the project area east of the Des Plaines River. The north-south roadways in the vicinity include Illinois Route 53 (four miles to the west) and U.S. Route 45 (six to seven miles to the east). Gougar Road is the main north-south route in the project corridor, however it is currently a two-lane rural collector road that is unpaved in many locations. Gougar Road ends north of 151st Street where State Street continues to the north, slightly offset to the east. Illinois Route 171 (Archer Avenue) is a southwest-northeast route that crosses the project area. The east-west, non-highway roads that serve the local

communities are two-lane, rural roads of varying quality spaced on a ½ to 1 mile grid and are generally continuous to the east.

2.2.1.2 Proposed Roadway Facilities

The Illinois Department of Transportation **[word deleted]** prepar**ed** plans in 1993 to rehabilitate and add a lane on Interstate Route 80 from Illinois Route 43 to U.S. Route 45 and to reconstruct Interstate Route 80 from U.S. Route 45 to U.S. Route 30. The current schedule for reconstruction of eastbound Interstate Route 80 from U.S. Route 30 to Illinois Route 43 is a start date of April 1, 1996, with a completion date of August 15, 1996. The westbound construction is scheduled to begin on April 1, 1997, with a completion date of August 15, 1997. The rehabilitation of Interstate Route 80 from Illinois Route 43 to Interstate Route 294 will be done in Fiscal Year 1997 at the same time as the westbound Interstate Route 80 reconstruction from U.S. Route 30 to Illinois Route 43. FAP Route 340 connects to Interstate Route 80 east of U.S. Route 30 and is therefore affected by this project. The design of FAP Route 340 has to accommodate the reconstruction of Interstate Route 80.

The Illinois Department of Transportation **[word deleted]** also prepar**ed** plans to add a lane to Interstate Route 55 between Naperville Road and Illinois Route 53 and resurface between Illinois Route 53 to east of Joliet Road. They will also be jacking the bridge over Joliet Road up 8 inches. **This improvement was completed in 1995.**

The 135th Street bridge crossing the Des Plaines River in Romeoville was closed in 1990. The Village of Romeoville is planning to replace the bridge and widen 135th Street to four lanes with a bike lane. In the 1988 Feasibility Study and Report for a High Level Vehicular Bridge over the Des Plaines River and Chicago Sanitary and Ship Canal in Lockport Township, a new crossing of the Des Plaines River was proposed at Caton Farm Road/Bruce Road. Part of the justification of this location depended upon an interchange on FAP Route 340 at Bruce Road. The City of Lockport is seeking support for a Caton Farm Road/Bruce Road bridge over the Des Plaines River and an interchange at Bruce Road.

Will County Highway Department is preparing plans and has prepared a preliminary study to improve 143rd Street to four lanes. The Will County Highway Study Recommended Long Range, Major Improvement Program, recommends linking Gougar Road with State Street to form a continuous north-south route.

Cook County Highway Department has indicated that while they would like 127th Street widened to four lanes, it is not a high priority at this time.

The Illinois State Toll Highway Authority **[word deleted] plans** to add a third lane of pavement in each direction on the North-South Tollway (Interstate Route 355) from 63rd Street south to the 83rd Street Toll Plaza. This improvement was constructed in 1994.

The Chicago Area Transportation Study in the 2010 Transportation System Development Plan designated a Strategic Regional Arterial (SRA) System. This system is proposed as a network of roads that can be effectively maintained and improved to supplement the highway system. West of the Des Plaines River, Caton Farm Road is the designated SRA. East of the Des Plaines River the SRA is Bruce Road east to Gougar Road, Gougar Road north to Illinois Route 7 (159th Street), then westerly along 159th Street. The SRA also extends east on 159th Street from Gougar Road to FAP Route 340. The report dated August, 1993, also identifies a need for a high level bridge across the Des Plaines River to connect Canton Farm Road and Bruce Road.

The Village of Woodridge has included a project to widen the Murphy Road bridge over Interstate Route 55 in their five-year plan. The Village of Woodridge also has a plan to improve Woodward Avenue/Murphy Road/Orchard Road from Interstate Route 55 to Boughton Road. This plan does not include improvements to the Murphy Road Bridge. In cooperation with the developer of Internationale Centre, Woodridge plans to widen Davey Road to four lanes with a 16 foot median in the project area. Similarly, the City of Lockport intends to improve Gougar Road from Bruce Road to 167th Street, and widen Bruce Road to three lanes from Farrell Road to Gougar Road with the developer of the Broken Arrow Subdivision.

2.2.2 Other Transportation Facilities

Commuter rail stations operated by Metra are located in Lemont and New Lenox. This service operates primarily for commuters bound for downtown Chicago.

PACE, the suburban bus system for the Rapid Transit System, operates two transit bus lines in the area. One line operates from Joliet through Lemont and into Chicago. The other operates from Joliet through Romeoville and into Chicago. The Draft PACE Comprehensive Operating Plan, 1992 identifies three potential park-and-ride site locations in the FAP Route 340 corridor. These locations are Interstate Route 55, Illinois Route 7 and New Lenox near Cedar Road.

The Chicago Sanitary and Ship Canal parallels the Des Plaines River within the project area. This canal handles shipping from Lake Michigan to the Mississippi River. Two railroad lines plus some industrial sidings operate through the area.

The non-operational Lemont Landing Field **(also known as Maletich & Dineff Restricted Landing Area)** is located on 127th Street. There have been plans to develop residential sites around its edge and revive aviation. **The [word deleted]** Lewis University **Airport** plans to expand their airport **located** west of the Des Plaines River.

Within the study area, there are several existing bikeways and many more trails proposed by local planning organizations. Old Plank Road Trail and Centennial Trail, along with proposed bikeways, are discussed in Section 2.8.

2.3 Socio-Economic Characteristics

2.3.1 Community Description

The communities in the area with older cores include Joliet (1990 population 76,836), Lockport (1990 population 9,401), Romeoville (1990 population 14,074), and Lemont (1990 population 7,348). Other communities include New Lenox (1990 population 9,627), Woodridge (1990 population 26,256), and Bolingbrook (1990 population 40,843) (see Exhibit 2-1). Regardless of age or structure, communities in the project area are in the process of annexing lands or have recently annexed lands next to the project limits. While several communities are located in the local study area, none are directly adjacent to the FAP Route 340 recorded centerline.

Overall, residences in the study area tend to be single family units spread out in low density development with little focus as a traditional community consistent with rural areas. Many of these residences have sprung up in the last several years. Low residential densities and an abundance of open, agricultural land have facilitated this in-migration. In addition, the area is within a reasonable commute of major employment areas in the region.

The oldest residential area is west of the recorded centerline and south of 143rd Street. More recent residential areas include those along Gordon Lane and the Spring View Subdivision. Between five and ten homes are located along Gordon Lane. The Spring View Subdivision has between 15 and 20 homes on lots of between one-half and one acre. In addition, the Timberline subdivision has recently been completed west of Lemont and south of New Avenue.

Those residential areas near the various alignments are relatively recent and generally occupied by middle-class residents who have only recently moved into the County. They would appear to have had limited opportunities to develop the friendship ties and acquaintances and to participate in formal neighborhood organizations typical of traditional older communities. Based on the size and cost of the homes as well as median income levels, these would not be considered low-income areas.

Overall, the County has been undergoing significant changes over the last decade which are projected to continue. Both population and employment are expected to increase. All of Homer Township, in particular, has been undergoing recent changes and significant residential development.

Residential development in the project area includes established urban areas, and developing residential areas throughout the rural portions of the project area. The developing rural residential areas consist of single family homes on large lots (typically one acre or more). Because these rural residential areas have developed relatively recently, strong community identities and cohesion elements are not likely to be present. These newer residential developments take advantage of low residential densities and abundance of open, agricultural land. The newer residential areas are occupied by middle-class residents who have recently moved into the area. Based on conversations with local realtors, the value of new homes, in 1990, ranges from $80,000 to $400,000 and

generally are increasing. The average listing for new homes in the project area is in the $125,000 to $200,000 range.

New Lenox, the community adjacent to the southern terminus of the project, is characterized as a well established, prosperous town. The land use within the area of the interchange of FAP Route 340 and FAI 80 is agricultural (row crops), with scattered housing and subdivisions located 1000 feet to the west, south, and east and 2000 feet to the north, from the planned interchange.

Bolingbrook lies to the north of the **recommended** FAP Route 340/FAI 55 interchange. Bolingbrook is an established stable community. Existing land use in the planned interchange area is industrial. Bolingbrook and New Lenox are currently experiencing growth along with many other communities in Will County. The rapid growth occurring in Will County is a relatively recent trend. Most of population growth has taken place over the past 15 years and is the result of in-migration. In the last half of the 1980's, Will County experienced an increase in the number of building permits of two and one-half times the number for the previous five years. Increasingly, the construction has taken place in the unincorporated areas.

Developing areas that have been recently permitted in the FAP Route 340 corridor include: Internationale Centre, an industrial and office complex located south of Interstate Route 55 between Joliet Road and Murphy Road; Bluff Oaks Estates, recently purchased **for protective corridor acquisition** by the **State of Illinois [phrase deleted]** located north of **Bluff** Road near the corridor; and Broken Arrow, a subdivision bordered by 167th Street, Gougar Road, Bruce Road and Farrell Road. Two subdivisions, Aero Landings and Rolling Meadows, along with the District 113 School District site are all proposed developments in Lemont.

2.3.2 Demographics

Table 2-1 shows 1990 income level comparison for the townships in the study area. Table 2-2 shows the existing and projected population within the FAP Route 340 study area, (see Exhibit 2-1 for Township locations), and Table 2-3 shows the age breakdown within the three counties in the project area.

In general, the areas which include the older, established communities of Joliet and Lockport in Will County have the lowest income levels. These are at the lower and lower-middle range of those for the region. The newer developing, unincorporated areas of Homer, DuPage, and New Lenox Townships, on the other hand, have the higher income levels for the study area. These are in the middle to upper-middle income levels.

Table 2-1
Per Capita Comparison

Township	Township per capita income	County per capita income	% difference
DuPage	$15,649	$15,186	+ 3.05%
Homer	$17,794	$15,186	+17.17%
Joliet	$12,255	$15,186	-19.30%
Lockport	$13,343	$15,186	-12.14%
New Lenox	$16,451	$15,186	+ 8.3%
Lemont	$18,815	$15,697	+19.86%
Downers Grove	$23,401	$21,155	+10.62%

Source: Illinois State Data Center

As shown in Table 2-2, much of Will County's growth is expected to occur in the northern townships that constitute the local study area (which includes five townships in Will County, and one - Lemont Township - in Cook County). The remainder of the County will also experience growth, but most of these areas are expected to retain their rural character.

The five townships in Will County are estimated to account for about 27 percent of the total population. Comparing the total growth with that projected for the municipalities in the area indicate that most of the growth is in the unincorporated areas of the County. In particular, the three townships through which FAP 340 passes in Will County - DuPage, Homer, and New Lenox - are expected to grow by approximately 50,000 persons. These represent about 30 percent of the entire growth anticipated for the County. Homer Township is expected to see an increase in population of 44 percent, while DuPage Township may increase population by as much as 68 percent between 1990 and the year 2010. Two other townships within the project area, Lemont and Downers Grove, are expected to see an increase of 40% between 1990 and 2010.

Table 2-2
Existing and Projected Population
of the General Study Area

Region by County	Population			Change 1990 to 2010	
	Average Household Size	1990	2010	Number	Percent
Cook	2.67	5,105,067	5,567,400	462,333	9%
DuPage	2.76	781,666	985,600	203,934	26%
Will	2.98	357,313	472,400	115,087	32%
Total		**6,244,046**	**7,025,400**	**781,354**	**12.5%**
Townships					
DuPage	3.30	55,444	92,883	37,439	68%
Homer	3.45	21,464	30,808	9,344	44%
Joliet	2.71	84,243	85,105	862	1%
Lockport	2.85	32,336	38,377	6,041	19%
New Lenox	3.10	20,716	23,775	3,059	15%
Lemont/ Downers Grove(1)	2.92/2.65	20,272	28,302	8,030	40%
Township Total		**234,475**	**299,250**	**64,775**	**28%**
Will County Townships		**214,203**	**270,948**	**56,745**	**27%**
Percent of Will County		**60%**	**57%**		

Source: Northeastern Illinois Planning Commission and U.S. Bureau of Census (1990).
((1) Includes Lemont Township in Cook County and the southern portion of Downer's Grove Township in DuPage County.

Table 2-3
Population By Age

County	Years of Age			
	Under 5	Between 5 and 18	Between 18 and 65	Over 65
Cook County				
1980	7.2%	20.6%	61.3%	10.9%
1990	7.4%	17.6%	62.5%	12.4%
DuPage County				
1980	7.5%	22.2%	63.4%	6.9%
1990	8.2%	18.2%	64.9%	8.7%
Will County				
1980	8.9%	24.3%	59.4%	7.4%
1990	8.2%	21.6%	61.6%	8.6%

Source: Northeastern Illinois Planning Commission (NIPC) 1991.

Changes in the age profile over time is one factor for analyzing a community's future growth potential and transportation requirements. A comparison of census data for 1980 and 1990 (as shown in Table 2-3) indicates a shift in the population age profile with the working age population (18-64) increasing about two percentage points from 1980 to 1990.

2.3.3 Racial, Ethnic and Special Groups

Although most people living within the three county project area are Caucasian, the proportion of African-Americans and other minority groups has been increasing. Within the townships in the project area, the minority percentage increased from 7 to 11 percent from 1980 to 1990. Minority characteristics are given in Table 2-4 which includes African-Americans, Hispanics, and Asians. Additionally, Table 2-5 shows the percent distribution of selected minority populations in the three county project area. Special groups include the elderly, the disabled and religious minorities. There are no special groups in the project area.

2.3.4 Public Services and Facilities

Exhibit 2-2 shows public services and facilities in the FAP Route 340 project area.

Existing educational facilities within the project area include approximately eleven elementary schools, four high schools, three colleges, and a seminary. The distribution of schools corresponds generally to the pattern of existing residential development. Schools are concentrated in the established communities at the east and west limits of the entire study area.

Table 2-4
Minority Characteristics
Of The General Study Area

Region by County	Minorities as a % of 1990 Population	Region by Township	Minorities as a % of 1990 Population
Cook	43%	DuPage	22%
DuPage	11%	Homer	4%
Will	18%	Lemont	3%
		Downers Grove	10%

Source: Northeastern Illinois Planning Commission and US Bureau of Census (1990 U.S. Census).

Table 2-5
Percent Distribution of Selected Minority Populations by County

County	Percent of Total Population					
	African-American		Hispanic		Asian and Pacific Islander	
	1980	1990	1980	1990	1980	1990
Cook County	23.6%	25.8%	9.5%	13.6%	2.2%	3.7%
DuPage County	1.2%	1.2%	2.6%	4.4%	2.8%	5.1%
Will County	9.7%	10.7%	4.3%	5.6%	0.9%	1.3%

*Source: **U.S.** Dept. of Commerce, Bureau of the Census - 1990 Census and 1980 Census.*

The large municipalities in Will County have fire departments with full time firefighters. The remainder of the County, including all unincorporated areas, depend on a number of volunteer fire departments. In some cases, municipalities extend their fire protection service to outlying areas through mutual assistance agreements.

Within the local study area, fire protection is provided by the cities of Joliet and Lockport for their respective areas. The remainder of the area is served primarily by volunteer firefighters in six Fire Protection Districts (FPDs) (see Exhibit 2-3). The Lemont Fire Protection District, the Northwest Homer Fire Protection and Ambulance District, the Homer Township FPD, and the New Lenox FPD serve most of the area traversed by the alternatives.

Three fire stations currently are located within the immediate project area (see Exhibit 2-2). One fire station, the Northwest Homer Fire Protection District Station No. 1, is located within the right-

of-way of the recorded centerline at 143rd Street. This facility, built in 1979-80, serves the northern third of Homer Township with both fire protection and ambulance service. Of the 40 persons on the staff, three are full time paid employees and the remainder are volunteers. The full time staff includes the Chief and two paramedics; the latter are available during the daytime hours, the time of greatest potential need.

Police protection for the County is provided by the Sheriff's Department and municipal police forces. The Will County Sheriff's Department provides protection to the unincorporated areas of the Will County. For the portion of the study area in Will County, protection is provided by the headquarters office in Lockport Township. For Downers Grove in DuPage County, police protection is provided by the DuPage County Sheriff's Department.

No police facilities are located in the vicinity of any of the alternative alignments.

Within the local study area, churches and synagogues, similar to education facilities, tend to be located in the established communities rather than in rural areas. Consequently, almost all are outside the immediate vicinity of the alternative alignments.

An exception is the Assembly of God church which is located on Illinois Route 7 (159th Street), near the **recommended** interchange with FAP Route 340. The recorded centerline is several hundred feet east of the church.

Three cemeteries are located near the recorded centerline. Two cemeteries, the Danish and St. Matthews, are located on 127th Street near the **recommended** interchange with FAP Route 340. They are adjacent to the Lemont Centennial Park. The third cemetery, Barnett Cemetery, is located on Gougar Road north of Bruce Road; it is about 500 feet west of the recorded centerline and the **recommended** interchange with FAP Route 340 (see Exhibit 2-2).

A majority of the hospitals and nursing facilities serving Will County are located in Joliet. None of the facilities are near the alternative alignments. Emergency ambulance service is provided by the Northwest Homer Fire Protection and Ambulance District.

2.4 Economic Characteristics

2.4.1 Labor Force Characteristics

About 188,000 persons were employed in Will County in 1992. The breakdown by occupation show that about 71% were managerial, technical or service positions. Manufacturing accounted for about 27% and Agriculture/Forestry/Fishing was a little over 2%.

2.4.2 Major Employers

Fourteen of the top 25 employers in Will County are located in Joliet including the top six: Franciscan Sisters Health Center; Caterpillar, Inc.; Silver Cross Hospital; Elgin, Joliet and Eastern Railway Company; State of Illinois; and Commonwealth Edison. Two of the top 25 employers, Lewis University and Commonwealth Edison are located in Lockport.

Other large employers near the project are Argonne National Laboratory and various businesses in the Internationale Centre Development.

2.4.3 Economic Bases

Based on analysis prepared by Northeastern Illinois Planning Commission (NIPC), total employment for the Chicago and suburban region is projected to grow from 3.4 million in 1985 to almost 4.2 million in 2010, an increase of 21 percent. Employment in the suburbs is expected to grow at a 28 percent rate. An overall regional increase in employment is occurring. While manufacturing jobs are decreasing the portion of those jobs located in the suburbs is expected to increase from 60 percent in 1980 to 74 percent in 2010. Growth in service and other non-manufacturing jobs is expected to account for two-thirds of the job growth in the suburbs. The majority of Will County's employment is presently located in the local study area, Joliet, Lockport and Plainfield and is projected to remain there. In 1985, about two-thirds of the total jobs in the county were in the five townships in the north central part of the county.

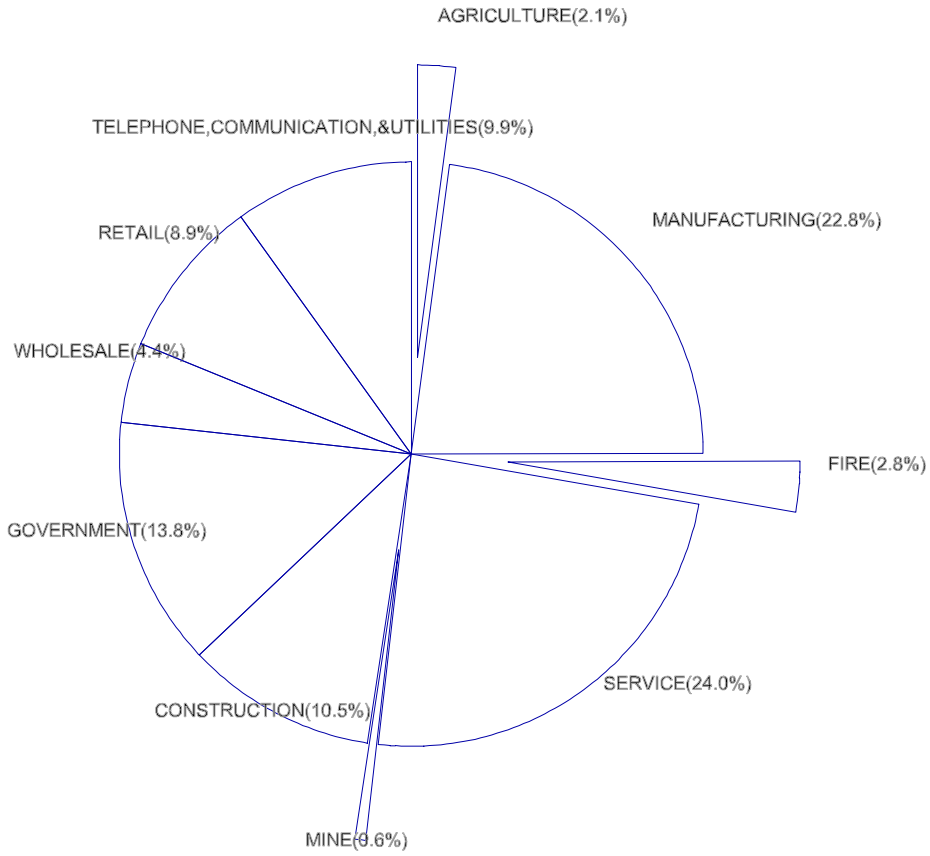
Will County has a diversified economic base dominated by service (24.0%) and manufacturing (22.8%); other important sectors include construction (10.5%), retail (8.9%) and government (13.8%), (See Table 2-6).

Tourism (included in "Services") is an important aspect of the Will County economy and a major source of revenue. In 1989, this county received $139,554,100 through visitor expenditures on food, lodging, transportation retail and entertainment/recreation. Major attractions within the project area include the I&M Canal at Channahon (1989 attendance 134,822), historic districts in Joliet and Lockport, the I&M Visitor Center in Lockport, and the Empress River Casinos (average daily attendance of 5,500 people) in Joliet. In addition, many tourists lodge in Will County on their way to sites in Cook County, and attractions such as Argonne National Laboratory.

2.5 Land Use and Development Trends

Exhibits 2-4 and 2-5 show general existing and proposed land use characteristics for the project area. The data was collected from local land use and zoning maps. The Will County Land Resource Management Plan (Will County, 1990) includes FAP Route 340 in the future land use plans for townships in the project area. In Joliet Township, nodes of commercial and office/research uses are proposed for the Interstate Route 80 interchange area. The Plan also

Table 2-6
Will County Earnings by Industry, 1989



Source: U.S. Department of Commerce, Bureau of Economic Analysis

projects concentrated commercial, office, research, and light industrial development around the interchanges in Homer and New Lenox Townships.

Two special designations, outlined in Exhibit 1-2, are expected to affect land use development in the project area. The first is the designation of the Illinois & Michigan (I&M) Canal National Heritage Corridor by the Federal government (Public Law 98-398, 1984), and the second is the designation of the Des Plaines River Valley Enterprise Zone by the State of Illinois (Senate Bill 1299, 1982). The Enterprise Zone designation provides special incentives for development which are likely to be enhanced by a new highway. The corridor was established to preserve the cultural,

historical, natural, recreational and economic resources of the area. **Recommended** FAP Route 340 is located partially within the I&M Canal National Heritage Corridor and is generally between one and two miles east of the Enterprise Zone. At Illinois Route 7 the Enterprise zone is adjacent to the FAP Route 340 corridor.

In Will County, Joliet and Lockport have developed comprehensive land use plans. Both plans acknowledge the importance and desirability of the extension of FAP Route 340 from Interstate Route 55 to Interstate Route 80. Other cities in the project area have land use plans and maps. Bolingbrook is planning for development of land for residential and commercial uses, after construction of FAP Route 340. Lockport expects growth in the northern and eastern areas of the city if the project is constructed. New Lenox has zoned areas near FAP Route 340 for residential development. The Will County Land Resource Management Plan (1990) proposes residential development along the FAP Route 340 corridor for Homer Township. Homer Township itself expects residential development with suburban densities in central and northeastern sections of the township. The Township also plans for lower density estate development in the remainder of the area. The Township plans assume that the project will be built.

Areas are being annexed regularly, particularly in the areas next to Joliet and New Lenox. For example, property adjacent to U.S. Route 6 has recently been annexed (1990) by New Lenox. This places the area around the **recommended** interchange at U.S. Route 6 under New Lenox jurisdiction and zoning control. Lockport recently annexed (1991) property between 167th Street and Bruce Road west of Gougar Road, which will be called the Broken Arrow Subdivision.

In the project area, zoning maps show that the majority of the land is currently zoned either agricultural or low-density residential lots. The major industrial zoned areas are located in DuPage, Joliet, and Lockport Townships. Minor amounts of commercial zoned areas are distributed throughout the project area. Some commercially zoned areas are concentrated in the urban areas and along Illinois Route 7 in Homer Township.

2.6 Agriculture

2.6.1 Counties

The following information is from the Illinois Agricultural Statistics Annual Summary - 1994 and the 1989 Illinois Agriculture Statistics.

2.6.1.1 Will County

Will County has 1,072 farms that a have total area of 326,054 acres. Farmland is about 61 percent of all the land in Will County. Of the farm area, about 95 percent is cropland. The average size of a farm in Will County is 304 acres. The cash receipts for 1992 in Will County were $91,610,000. The breakdown of crop cash receipts are as follows: corn - $28,179,000, soybeans - $22,554,000, wheat - $89,000, and all other crops - $27,964,000. The breakdown of livestock cash receipts are as follows: cattle and calves - $3,918,000, hog and pigs - $4,268,000, all other livestock and

products - $4,639,000. The Will County Land Resource Management Plan (1990) designates the majority of property in the southern portion of the county as agriculture preservation areas.

2.6.1.2 Cook County

Cook County has 269 farms that have a total area of 42,244 acres. Farmland is about 13 percent of all the land in Cook County. Of the farm area, 81 percent is cropland. The average size of a farm in Cook County is 157 acres. Cook County cash receipts for 1992 were $28,576,000. The breakdown of crop cash receipts are as follows: corn - $2,107,000, soybean - $1,326,000, wheat - $14,000, all other crops - $23,780,000. The breakdown of livestock cash receipts are as follows: cattle and calves - $3,918,000, hogs and pigs - $4,268,000, all other livestock and products - $4,639,000.

2.6.1.3 DuPage County

DuPage County has 95 farms that have a total area of 18,206 acres. Farmland is about 9 percent of all the land in DuPage County. Of the farmland area, 88 percent is cropland. The average size of a farm in DuPage County is 191 acres. DuPage County cash receipts for 1992 were $22,967,000. The breakdown of crop cash receipts are as follows: corn - $2,001,000, soybeans - $942,000, wheat - $14,000, all other crops - $18,913,000. The breakdown of livestock cash receipts are as follows: cattle and calves - $218,000, hogs and pigs - $277,000, all other livestock and products - $602,000.

2.6.2 Prime Farmland and Others

The U.S. Department of Agriculture (USDA) (through the Farm Preservation Act (FPA)) defines prime farmland as soils that have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. It may exist as cropland, pastureland, rangeland, forest land, or other land but is not designated in urbanized areas or in bodies of water. Prime farmland produces the highest yields when treated and managed according to acceptable farming methods. Additional farmland of statewide importance is defined by the USDA as land other than prime farmland that is valuable for the production of food, feed, forage, fiber, and oilseed crops. Unique farmland and additional farmland of local importance are not present in Cook, Will, or DuPage Counties.

Using the USDA-Soil Conservation Service definition, over 83 percent of Will County's land is classified as "prime farmland". Within the project area, all of Homer Township and large portions of DuPage, Lockport, and New Lenox Townships have soils which are classified as prime farmlands. The USDA-Soil Conservation Service administers the federal Farmland Protection Policy Act (FPPA). The Illinois Department of Agriculture (IDOA) oversees its program under the Illinois Farmland Preservation Act.

2.7 Forest Preserves and Parks

Exhibit 2-6 shows several parks and open spaces in the project area. These parks include county forest preserves and regional and municipal parks. A listing is included below.

Higinbotham Woods

Higinbotham Woods is located directly east of Pilcher Park near Interstate Route 80 and is owned by the Joliet Park District. There are 239 acres of land, similar to Pilcher Park and which contain mesic, wet-mesic, upland, and wet bottomland forests along Hickory Creek.

Pilcher Park

Pilcher Park is located north of US Route 30 and Interstate Route 80, and west of New Lenox within the Joliet Park District. The park consists of 296 acres of high-grade mesic, wet-mesic upland, and wet-bottomland forest. It is included on the Illinois Natural Areas Inventory and is a breeding habitat for a wide variety of bird species. Springs and streams also are habitat for the mottled sculpin, an uncommon fish in Illinois.

Highland Park

Highland Park is a small park located west of Pilcher Park and exhibits physical traits similar to Pilcher Park.

Lower Spring Creek Preserve

Lower Spring Creek Preserve is managed by the Forest Preserve District of Will County. It is located east of the City of Joliet and north of U.S. Route 6 along Spring Creek. This area is dedicated to preserve natural habitat such as uplands and also for flood control along Spring Creek. There are no trails in this preserve. This preserve consists of approximately 424 acres.

Messenger Woods

Messenger Woods, a nature preserve, and other associated holdings of the Forest Preserve District of Will County are within Homer Township along Spring Creek. These areas total 407 acres with 50 acres being recognized by the Illinois Nature Preserve Commission and Illinois Natural Areas Inventory as containing rare natural communities. Additional woodlands exist at the southernmost reaches of Spring Creek, two miles northwest of New Lenox. **Messenger Woods is within the Spring Creek Preserve.**

John R. Lamb Woods

This 75-acre park is managed by the Forest Preserve District of Will County. It is a passive recreational park with a small picnic facility **that is accessible as required by the American Disabilities Act (ADA)**. There are **ADA accessible** developed trails **and latrines [phrase deleted]**.

Dellwood Park

Dellwood Park is a 148 acre multi-use park managed by the Lockport Township Park District. This area is southwest of the City of Lockport. Some of the activities include walking/biking trails, softball and soccer fields, a playground and a performing arts theater.

Dellwood Park West

Located west of Dellwood Park this nature area is also managed by the Lockport Township Park District. The 170 acre area is undeveloped at this time. This area contains a large prairie. A portion of Lockport Prairie East natural areas inventory site is contained within Dellwood Park West.

Runyon Preserve

Located north of the City of Lockport and west of Farrell Road, this 21 acre preserve is a picnic area. The Forest Preserve District of Will County provides a picnic shelter and an open play field.

Lockport Prairie Nature Preserve

Lockport Nature Preserve, which is located approximately three miles west of FAP Route 340 between Illinois Route 53 and the Des Plaines River, is under the jurisdiction of the Forest Preserve District of Will County. This area is 254 acres with many significant features of the preserve including **dry-mesic, mesic,** wet-mesic **and wet** dolomite prairie**s**, sedge meadow, **marsh,** and the presence of **several federal and state listed [words deleted]** species. **Lockport Prairie Nature Preserve supports the largest known Illinois populations of three federal listed species: Hine's emerald dragonfly, Leafy prairie clover, and Lakeside daisy.**

Long Run Seep Nature Preserve

Long Run Seep Nature Preserve, dedicated in November of 1989, is located approximately two miles west of FAP Route 340 and south of 143rd Street and is maintained by the Illinois Department of **Natural Resources**. This 83-acre preserve was purchased as an Illinois Nature Preserve and has two tributaries of Long Run flowing south of the project area. Both tributaries have cut small valleys in the bluff. Several calcareous seeps and springs also flow from the bluff. The preserve contains dry-mesic forest, wet-mesic floodplain forest, a medium gradient perennial

stream, successional field, and a fen/seep community complex **and a federal listed species, Hine's emerald dragonfly**.

Lemont Centennial Park

Lemont Centennial Park is southwest of Lemont at 127th Street and is within the jurisdiction of Lemont Park District. This 70-acre recreational park serves Lemont residents with access from 127th Street (a portion of the 70 acres is designated for the Lemont School District). The park contains facilities for active recreation such as tennis courts, a swimming pool, and playing fields.

Romeoville Prairie Nature Preserve

The Romeoville Prairie Nature Preserve is located 1 mile south of the Veteran's Memorial Woods on the west bank of the Des Plaines River and is maintained by the Forest Preserve District of Will County. This area is a 128-acre Illinois Nature Preserve dedicated in July of 1984 which contains unique natural communities considered rare by the Illinois Department of **Natural Resources**. The significant features of the preserve are the mesic, wet-mesic, and wet dolomite prairie, marsh, sedge meadow, springs, fens, and floodplain forest on shallow soils over limestone bedrock. This diverse prairie also contains Illinois endangered species.

Veterans Memorial Woods

The Veteran's Memorial Woods are located east of Joliet Road and north of the Des Plaines River and southwest from Keepataw Forest Preserve. Forest Preserve District of Will County maintains jurisdiction over this park which consists of approximately 75 acres of heavily wooded oak forest. This area is typically a dry-mesic upland forest and is considered environmentally sensitive. Facilities include picnic shelters and restrooms.

Keepataw Forest Preserve

Keepataw Forest Preserve is a 215 acre parcel located south of Bluff Road, west of the Will/Cook County line. 183.53 acres of the preserve was purchased in 1977 using Federal Bureau of Outdoor Recreation (BOR) funds under the Land and Water Conservation (LAWCON) Act and is maintained by the Forest Preserve District of Will County (FPDWC). The property was purchased to preserve the natural resources of the area, as well as to create recreational opportunities. The land has remained relatively undeveloped due to the limited access into the Forest Preserve and the uncertainty of the FAP Route 340 crossing location. Limited walking trails are available in Keepataw, although a new parking area and a trail next to Bluff Road were completed in 1991 to satisfy LAWCON funding requirements.

The Keepataw Forest Preserve has one large (2 acres) lake centrally located in the preserve created by quarrying and several smaller quarry ponds. Two ravines cut through the bluff; one on the far west side, and a larger one with a meandering stream and broad wet area on the east side. Several small springs and seeps issue from the base of the bluffs. Fifty-nine percent of the site is in the 100-

year floodplain (107 acres). Upland forest is restricted to ravines and the river bluffs; with the remaining uplands mostly containing pastured areas. The forested upland is dominated by black oak, red oak, white oak, and shagbark hickory. Marshes, sloughs, and revegetated quarry areas comprise most of the vegetation of the bottomland. Interspersed throughout are dense thickets of willow and red osier dogwood.

This forested area preserves the native flora/fauna, provides nature education programs, and flood protection. It also contains several springs and marshes which give rise to rare and endangered floral and fauna species including the spotted turtle.

Black Partridge Forest Preserve and Nature Preserve

These preserves are immediately north of the Des Plaines River and are located adjacent to Bluff Road. The right-of-way for the recorded alignment is adjacent to these preserves. The Forest Preserve District of Cook County maintains jurisdiction on these preserves. The northern portion is 80 acres - bounded by Cook-DuPage County line on the north and Bluff Road on the south. The northern portion was designated as a Nature Preserve in January of 1965. The Nature Preserve is composed of mesic upland forest, dry-mesic upland forest, springs, and seeps. For a detailed description of the vegetation and cover types, see Section 2.12.1. A feature of special mention is the Black Partridge Creek, a relatively clean, spring-fed stream which contains several invertebrate species characteristic of high water quality.

The southern portion of Black Partridge Forest Preserve, bounded by Bluff Road on the north and the Des Plaines River on the south, is a 355-acre parcel which was purchased with grant aid under the Land and Water Conservation (LAWCON) Act of 1965 through the Department of the Interior. This section contains Goose Lake (a 23-acre lake) near the western edge of the preserve. Several state endangered species forage within and around this lake such as heron and other water fowl. This area has been posted as a "wildlife refuge" by the Cook County Forest Preserve District to discourage hunting.

Lemont Woods Forest Preserve (renamed Wood Ridge Forest Preserve)

Lemont Woods Forest Preserve is located just north of Black Partridge Nature Preserve on Davey Road and is maintained by the Forest Preserve District of DuPage County since purchasing it in 1989. Lemont Woods is a 190-acre park area and is a mesic and dry-mesic upland forest dominated by burr oak, white oak, and shagbark hickory. A portion of the parcel has been cleared for farming, the remainder is forested and undeveloped. No plans have been made to provide recreational uses. However, the Forest Preserve District of DuPage County is undertaking a savannah restoration project at this preserve.

Waterfall Glen Forest Preserve

Waterfall Glen Forest Preserve is a 2470 acre forest preserve with a multi-use trail system which is managed by the Forest Preserve District of DuPage County. It is located east of Lemont Road and south of Interstate Route 55. There are many significant and diverse features since this area is large including various types of woodlands, prairies, wetlands and marshes. Numerous federal and state threatened and endangered species of plants and animals exist within this preserve.

Future Preservation Areas

The Forest Preserve District of Will County (FPDWC) has proposed a long-term goal of acquiring property along Spring Creek from the Cook-Will County line to Cedar Road. The FPDWC intends to reserve this property for green space and flood and aquifer recharge protection. The proposed acquisition includes more than 900 acres along Spring Creek. FPDWC has identified several other parcels that they would like to acquire in the future, including a property located west of the Keepataw Forest Preserve along the Des Plaines River. This acquisition would be a western continuation of the existing preserve properties in the area.

A plan developed by NIPC, the Northeastern Illinois Regional Greenways Plan (1992), will focus "not so much on securing broad parts of land as on creating a network of long corridors -- or 'greenways' -- that will string together the region's precious preserves." This plan was adopted in September 1992 and suggests a regional framework and recommendations for actions. Spring Creek located between U.S. Route 6 and Bruce Road, is identified in the plan as a potential greenway.

2.8 Bikeways

Within the project study area there are several existing bikeways and many more trails proposed by the local planning organizations. Numerous bikeways are proposed as part of NIPC's Northeastern Illinois Regional Greenways Plan (1992). Exhibit 2-7 shows the network of many of the existing and proposed bikeways within the study area. Of special interest is the lack of a north-south bikeway connection between facilities in DuPage and Will Counties.

At the south end of the FAP Route 340 corridor, the newly acquired Old Plank Road Trail forms a 20-mile east-west trail connection between Joliet, New Lenox, and numerous communities to the east in Will and southern Cook Counties. In December 1992, the 100-foot wide right-of-way was purchased from the Penn Central Railroad. The trail passes through farmland, pasture, established neighborhoods, and new subdivisions. The Old Plank Road Trail was purchased for use as a bicycle/pedestrian corridor, and protected habitat for plants and animals.

The City of Lockport is planning open space along the FAP Route 340 corridor. As a part of this planning, the City of Lockport and Lockport Township Park District would like to develop hiking and biking trails along Long Run Creek, Big Run Creek, Fiddyment Creek, and Fraction Run Creek

in Lockport and Homer Townships. These trails are included in the Interim Lockport Comprehensive Plan and Land Use Map as open space.

The Village of Lemont has plans for the design and construction of approximately 2.0 miles of bikepath on the original tow path along the Illinois and Michigan Canal. The Illinois State Trails Plan (draft 1994) developed by the Illinois Department of Conservation **(now Illinois Department of Natural Resources, IDNR)** includes the Illinois and Michigan Canal trail from Summit to La Salle/Peru.

The Centennial Trail starts at Lockport on the Des Plaines River and follows the Illinois and Michigan Canal, and the Chicago Sanitary and Ship Canal connecting east to Lyons. The trail is on land leased from the Metropolitan Water Reclamation District (MWRD), by the three Forest Preserve Districts of Cook, DuPage, and Will Counties. The Will County Forest Preserve District (FPDWC) opened the Centennial Trail from the Will/Cook county line west in January, 1990 as a portion of one of their proposed regional pedestrian/bicycle trails. The three Forest Preserve Districts received ISTEA funding for a 20 mile section of the Centennial Trail from Chicago's western city limits at the Chicago Portage Landmark (47th and Harlem) to Lockport's historic trail. The project includes design and construction of the 20 mile section of Centennial Trail. The FPDWC canoe base at the Des Plaines River and Stephen Street is also part of this trail which was proposed in the Year 2010 Transportation Plan

In a letter dated April 15, 1991, the FPDWC indicated that they had four other proposed trails. The first location would link the trails on the north and west sides of the Des Plaines River to Centennial Trail. The second path would be along the Commonwealth Edison right-of-way on the north and west sides of the Des Plaines River. The third trail would link the Keepataw, Black Partridge, and Waterfall Glen Forest Preserves (exact location not determined). The fourth trail would be along Spring Creek, linking Messenger Woods with properties owned by the Forest Preserve District near Forest Park/Joliet.

At the northern end of the FAP Route 340 corridor, a network of existing and proposed municipal and Forest Preserve District of DuPage County bikeways and trails provide a feeder system of local and regional paths branching throughout DuPage County and connecting with central Cook and eastern Kane County as well. The Woodridge Park District has a continuous bikeway system planned in Woodridge which incorporates their bikeway system with the DuPage County bikeway network and the Illinois Prairie Path. The Illinois Prairie Path is a 55 mile path system located from Maywood to south of Aurora. Woodridge has plans to develop a bikeway along the Woodward Avenue extension to Murphy Road, then to Davey Road with a possible connection to the FAP Route 340 bikeway at Davey Road. Woodridge has also indicated that the annexation agreement for Internationale Centre has provisions for a bikeway/pedestrian trail along the dedicated roads within the development.

In conjunction with the proposed connection between Churchill Woods and Hidden Lake Forest Preserves, bikeway planning agencies envision a trail extending to the north into DuPage County.

2.9 Cultural Resources

2.9.1 Historic Structures

A survey was conducted by the Midwestern Archaeological Research Center, Illinois State University in March 1987 under **Illinois Department of Transportation (**IDOT**)** contract to identify structures with architectural merit within the project's area of potential effect (Exhibit 2-6 identifies the location of the structures). Several potentially significant structures were identified in the project area. Near New Lenox there are three structures: two, two-story Greek-Revival residences and one, two-story Italianate residence. North of Illinois Route 7 and west of Gougar Road, there is a brick house and brick barn that were built in the early 1900's. Another structure, a prefabricated, metal, "Lustron" house, is located in Section 6 of Homer Township.

Appendix B **under Illinois Historic Preservation Agency** contains the Determinations of Eligibility (DOE)s for the above referenced structures. The Illinois State Historic Preservation Office (ISHPO) has determined one of the Greek-Revival residences is not eligible for inclusion on the National Register of Historic Places. An architectural historian has concluded that the brick barn and house have been modified to a point at which they no longer maintain the architectural integrity and therefore are not eligible for listing and the ISHPO has concurred with this finding. The Lustron house has been determined eligible and a copy of the DOE **dated February 3, 1992** is attached in Appendix B **under Illinois Historic Preservation Agency**. The other two structures have been determined to be outside the area of potential effect.

2.9.2 Historic Resources

I&M Canal National Heritage Corridor

The I&M Canal National Heritage Corridor, a National Historic Landmark, (see Exhibit 1-2) is west of Chicago, along the Des Plaines River. The corridor extends from about Palos Park to Peru. The corridor was established to retain the cultural, historical, natural, recreational, and economic resources of the Illinois and Michigan Canal area. It was recognized by Congress in 1984 for its unique contribution to the nation's development and contains the Des Plaines River, the Chicago Sanitary and Ship Canal and the Illinois and Michigan Canal.

Numerous museums and historical sites are located in the I&M Canal National Heritage Corridor. Visitors to the area museums can see artifacts from French trappers, early Canal towns, and 19th Century American cultures throughout the corridor. The corridor's scenic beauty can be experienced in the numerous forest preserves and nature preserves that provide habitat for Illinois wildlife. Another characteristic of the corridor is its diverse industrial activity which includes petrochemical plants, electrical generating station, quarries, and numerous manufacturing plants.

The Illinois and Michigan Canal

The Illinois and Michigan Canal extends from Chicago to Peru, Illinois and is approximately 100 miles long. Originally, it was 60 feet wide at the surface, 36 feet wide at the bottom, and 6 feet deep. The canal, part of the National Park System, forms the spine of the National Heritage Corridor and is largely unnavigable. Completed in 1848, the canal connected Lake Michigan with the Illinois River, and was a major transportation trade route.

Isle a la Cache Museum

Isle a la Cache Museum is located on an 80-acre island in the Des Plaines River in Romeoville. The museum offers exhibits on the I&M Canal and the French-Indian fur trade. The museum is owned and operated by the Forest Preserve District of Will County.

The Lockport Historic District

The old canal town of Lockport Historic District is bounded by the canal, 7th Street, Washington Street, and 11th Street. It offers 37 historic sites and structures. The District is one of the best preserved canal towns; contains the Will County Historical Society Museum, the I&M Canal Museum, the Pioneer Settlement, and the recently restored Gaylord Building.

Swede Town

Swede Town, north of the Des Plaines River, is a small parcel of land within Keepataw Forest Preserve. Swede Town is the name given to the remnants of a nineteenth century Swedish miners settlement who were employed by a local mining company. The remains include a kiln chimney and foundation remnants.

John Lane Commemorative Marker

John Lane Commemorative Marker, which is a hand-made stone marker commemorating the inventor of the steel-tipped plow, is located at the northeast corner of 163rd Street and Gougar Road. The marker is on the property once owned by John Lane. The forge used to make the steel-tipped plow is also located on the property, but it is outside the project limits.

2.9.3 Archaeological Resources

Under IDOT contract a survey by the University of Illinois found numerous archaeological sites. Archaeological Phase 1 surveys were completed in Spring 1993. Phase II surveys have been conducted by Northern Illinois University and were completed in Spring 1995.

2.10 Geological Setting

2.10.1 Bedrock and Structural Geology

The project area lies on the eastern flank of a Paleozoic bedrock structure known as the Kankakee Arch which separates the Illinois Basin and Michigan Basin. As a result of this structure, the bedrock has an easterly dip resulting in exposure of the oldest formations along the Des Plaines River.

The near surface bedrock formations are sedimentary rocks formed in ancient, shallow to markedly deep, seas. The sedimentary rocks encountered include dolomite, limestone, shale, sandstone, siltstone, and claystone. Bedrock valleys occur within the uppermost Silurian bedrock in the project area. The Silurian dolomite is a shallow bedrock aquifer and is utilized for a water supply in Will and southern DuPage Counties. Three bedrock valleys are known in the project area. Two coincide roughly with the existing valleys of Spring and Hickory Creeks, and the third connects these two.

Exhibit 2-8 gives the structural geology of the project area beneath the glacial till. This structure provides a suitable base for the construction of a highway project.

2.10.2 Surface Geology and Topography

Within the project area, the bedrock formations are overlain with morainal deposits of glacial drift from the Wisconsin glaciation. The northern area of Will County contains the full width of the Valparaiso Moraine which contains the West Chicago, Keeneyville, Westmont, and Clarendon Moraines, and runs along the eastern border of Will County from the Illinois-Indiana border and north into Cook County. The Moraines consist of a glacial drift which is comprised of various amounts of unconsolidated till, silt, clay, sand and gravel, and contains pockets of peat. Till is unstratified, heterogeneous materials deposited indirectly by glacial ice. Glacial meltwater deposited sand and gravel within previously eroded bedrock river valleys. Superficial deposits of sand and gravel were deposited in this way along the DuPage and Des Plaines River Valleys. In the Des Plaines River Valley, the river has cut through the glacial deposits to expose bedrock. Exposure of the overlying permeable Lemont drift has resulted in the development of ground water springs and seeps along the base of the bluffs. Other unexhumed valleys completely filled with sand and gravel deposits are oftentimes utilized for groundwater resources.

Glacial sculpturing of the area created a hilly topography which has allowed the development of a variety of habitats including upland forests, prairies, wetlands, and floodplain forests. The generalized topography of the area depicts a gradual change in elevation with the lowest elevations occurring in the Des Plaines River Valley.

Mineral elements contributed by the bedrock and glacial drift are calcium, magnesium, sodium, and especially iron. These elements are present in the mineral soils and in the water bodies in contact with the mineral soils.

2.10.3 Mineral Resources

The northeastern Illinois region contains large natural resources of common building materials, such as stone, gravel, sand, and clay, which support a large mineral industry. Historical locations of quarries and pits around the project area are depicted in Exhibit 2-9. In 1982, there were 10 active and 13 inactive sand and gravel pits in Will County, placing the County fourth in the state in sand and gravel production. These pits are concentrated in the Plainfield, Bolingbrook, and Channahon areas.

Dolomite and limestone are quarried in both Cook and Will Counties as a source of crushed stone. Undeveloped high purity reef-type dolomite resources have been identified in the Des Plaines River Valley, east of the project area at Lemont, and other undeveloped resources have been identified west of the project area in the Lockport and Romeoville area.

2.11 Water Quality and Water Resources

2.11.1 Groundwater Resources

No sole source aquifers, as defined by Section 1424(e) of the Safe Drinking Water Act, exist within Illinois. There are four aquifer systems in northeastern Illinois (NIPC, 1976) including: 1) sand and gravel deposits in glacial drift; 2) shallow dolomite limestone formations; 3) Cambrian-Ordovician or deep sandstone aquifer; and 4) the Mt. Simon aquifer (Exhibit 2-8). Exhibit 2-10 shows the generalized hydrologic cross-section of the Des Plaines River Valley.

Groundwater is the primary source of drinking water in the project area and is found in two major aquifers, the shallow and deep systems. Groundwater is used as a source of public water supply for municipalities, subdivisions, and state institutions within the study area. Groundwater is also utilized by private owners and as many as 367 wells were added between 1986 and 1989 in the study area, and with two exceptions, these wells are set in limestone bedrock beneath 50 feet of glacial till.

Only one public water supply system, Joliet, utilizes the sand and gravel deposits near the Spring Creek and the Hadley Bedrock Valley. Joliet has seven public water supply wells, five shallow gravel wells and two deep rock wells, located within the immediate vicinity of the project. Exhibit 2-11 presents the locations of these recorded wells within the project area.

The Hadley Bedrock Valley Aquifer consists of sand and gravel deposits contained within pre-glacial age buried stream valleys that underlie parts of the Spring Creek and Hickory Creek drainage areas. Well logs from the five Joliet water supply wells in the aquifer indicate the shallow groundwater surface occurs from 10 to 36 feet below ground surface, subparallel to surface topography. The five Joliet "gravel wells" were completed in 1950 and range in depth from 83 to 113 feet deep. Their combined output for 1994 was 1.2 billion gallons, or approximately 12 percent of the annual water supply budget for Joliet.

Water from wells in the Hadley Bedrock Valley Aquifer typically contains higher levels of total hardness, total dissolved solids, and dissolved iron than that from bedrock wells. The data from analysis provided by the City of Joliet for 1994 indicated a range of values for total hardness from 347 mg/l to 457 mg/l, total dissolved solids from 590 mg/l to 640 mg/l, and dissolved iron from 1.0 mg/l to 2.0 mg/l. Iron concentration in water from the gravel wells is high enough that it requires treatment with polyphosphates to keep it in solution. Chloride concentrations in water samples from the gravel wells in 1994 ranged from 5.0 mg/l to 34 mg/l. The combination of age and mineralization of the well screens and filters in the gravel wells is believed to have reduced their capacity by as much as 50 percent (Joliet Department of Public Works, personal communication).

The gravel wells are used by Joliet to smooth demand curves on the deeper bedrock wells and to provide supplemental water during periods of high demand. This allows operation of the large capacity pumps in the bedrock wells at moderately constant rates, reducing power fluctuations, wear, and frequency of maintenance. Projected growth in the area has led to the consideration of replacing or supplementing the gravel wells, adding deep bedrock wells, and pumping water from the Kankakee River.

Streams, springs, seeps, and wetlands are groundwater discharge sites in the study area. During drought conditions, groundwater ceases to discharge to wetlands, and streams actually provide some recharge to groundwater during 7-day, 10-year low flows. Groundwater feeds springs, seeps, and wetlands associated with Black Partridge Creek, Big Run, and Long Run.

2.11.2 Surface Water Characteristics

The FAP Route 340 project occurs within the Des Plaines River basin, a watershed that drains 1,366 square miles and is 117 miles long. The majority of the watershed is part of the greater Chicago metropolitan area and has been extensively developed for urban and industrial use. Remaining rural and agricultural lands are primarily in Lake and Will Counties (**Illinois Environmental Protection Agency (IEPA)**, 1992).

Five methodologies have been used to assess the physical, chemical, and biological characteristics of the streams in the project area. Not all methodologies were available for use on each stream. The methodologies consist of 1) field surveys by the Illinois Natural History Survey (INHS), 2) analysis of the aquatic macroinvertebrate data using the IEPA Aquatic Environmental Classification System, 3) the IEPA and **Illinois Department of Natural Resources (IDNR)** Biological Stream Characterization (BSC) data for area streams, 4) the IEPA designated use support assessments for rivers and streams, and 5) chloride concentrations.

The INHS collected fish, mussel, aquatic macroinvertebrate, and water quality data from some of the streams in the project area during 1987, 1988, 1989, 1994, and 1995 (Ceas et al. 1989; Ceas and Wetzel, 1990; Berlocher and Wetzel, 1989; Wetzel, 1989; Wetzel, 1990; and, Taylor, et al. 1994 and 1995). Aquatic and riparian habitats were also assessed.

The data from the aquatic macroinvertebrate sampling were used in the IEPA Aquatic Environmental Classification System (Wetzel, 1990). This system is based upon the numbers and kinds of aquatic macroinvertebrates collected and their assignment to one of four categories (balanced environment, unbalanced environment, semi-polluted environment, and polluted environment) which reflect tolerance to a polluted environment.

The IEPA and **IDNR** Biological Stream Characterization (BSC) work group has developed a five-tiered classification system predicated largely on the type and condition of the fishery resource (Hite and Bertrand, 1989). The five categories range from Class A (excellent biotic resources) to Class E (very poor biotic resource).

The IEPA also assesses Illinois water bodies for the degree of overall and individual use supports (IEPA, 1992). These individual uses include fish consumption and aquatic life which apply to all water bodies within the state, along with swimming, secondary contact, drinking and industrial water supplies whose uses apply to defined water body segments.

The degree of designated use support is described in terms of full support of the use, full/ threatened, partial support with minor impairment, partial support with moderate impairment, and nonsupport.

Also given is chloride concentration data from water quality analysis performed in 1987, 1988, and 1989. For Black Partridge Creek water quality information was also collected in 1994 and 1995. Chloride concentration is a parameter chosen because highway systems contribute to chloride content of water bodies by the maintenance use of deicing salts. However, chloride in water comes from many sources and varies widely in average content. Other sources of chloride include precipitation, surface runoff, sewage plant effluent, industrial wastes, agricultural chemicals, and septic systems. In Illinois, the general use water quality standard for chloride concentration is 500 mg/l. A chloride concentration of 70 mg/l is equivalent to weak sewage (Ames, 1988).

With regard to Illinois water quality standards, all streams in the project area fall under the General Use Water Quality Standards, except the Chicago Sanitary and Ship Canal. The canal is assessed under the Secondary Contact and Indigenous Aquatic Life Standards.

From south to north the rivers, creeks, and canals in the project area consist of tributaries of Hickory Creek, Spring Creek, Fraction Run, Fiddyment Creek, Big Run, Long Run, Illinois and Michigan Canal, Chicago Sanitary & Ship Canal, Des Plaines River, and Black Partridge Creek. The physical and biological characteristics of these resources are summarized in Table 2-7, while the use classifications are presented in Table 2-8. Stream locations are depicted on Exhibits 2-12 to 2-14. The recorded centerline of FAP Route 340 is included on these exhibits as a general reference point.

Hickory Creek

Hickory Creek, although not in the study area, receives flows from tributaries situated in the study area (Table 2-7). Located in the New Lenox area, the stream has an overall designated use rating of partial support, minor impairment (Table 2-8). The main causes are metals and ammonia from municipal and combined sewer overflow point sources. The IEPA/**IDNR** biological stream characterization work group rates this reach of Hickory Creek as Class C (fair biotic resource).

An unnamed tributary of Hickory Creek flows within the study area and is a channelized ditch surrounded by agricultural fields. The bank slopes are 6 feet in width; however, the ditch itself has a typical width of 3 feet. The ditch crosses underneath I-80 and joins another unnamed tributary where it then flows through a residential area of New Lenox to join Hickory Creek. Intermittent in nature, no water quality data are available for this stream.

Spring Creek

Spring Creek is a tributary of Hickory Creek and is located in the study area. Approximately 40 percent of the stream length has been channelized. Where the **recommended** roadway crosses one of the channelized segments the creek is 5 to 10 feet wide and 10 to 18 inches deep. A few pools located at bends in the stream increase the width to 15 feet and reach a depth of 5 feet. The substrate is composed of 50 percent gravel, 35 percent sand, 10 percent silt, and 5 percent cobble.

Habitats include cool, clear, shallow riffles and runs, with cool, clear pools at bends in the stream. The terrestrial habitat on each side consists of rowcrop or uncultivated riparian grassland. The IEPA overall designated use rating (Table 2-8) for this stream is partial support, minor impairment. The main causes are siltation and other habitat alterations from channelization and dam construction.

Water quality sampling in May and September, 1987; June, 1988 (Wetzel, et al., 1989); and February, 1995 (INHS, 1995) indicated that all parameters were within the General Use Water Quality Standards as chloride concentrations ranged from 42 to 204 mg/l. The IEPA Aquatic Environmental Classification System classifies this stream as an unbalanced environment. The IEPA and **IDNR** biological stream characterization work group rates this reach of Spring Creek as Class E (very poor biotic resource). Thirteen species of fish were identified during fish collections and included the southern redbelly dace (*Phoxinus erythrogaster*) and fantail darter (*Etheostoma flabellare*), two species considered to be intolerant.

TABLE 2-7
SUMMARY OF PHYSICAL AND BIOLOGICAL CHARACTERISTICS OF STREAMS
WITHIN THE FAP ROUTE 340 CORRIDOR, WILL, COOK, AND DuPAGE COUNTIES, ILLINOIS

	Total Drainage Length, miles	Total Drainage Area, sq mi	Drainage Area above the Project, sq mi	Flow Characteristics[1/]	Substrate[2/]	# of Fish Species Present[2/]	Aquatic Environ. Classification System[3/]	Watershed Characteristics
Tributary to Hickory Creek	3.0	2.6	1.2	I	Silt and Clay	--	--	Agricultural
Spring Creek	16.0	20	12.5	P	50% gravel 35% sand 10% silt 5% rubble	13	Unbalanced	40% of length channelized, Agricultural
Fraction Run	5.7	6	3.0	I	40% clay 30% sand 30% gravel	8	Semi-polluted to unbalanced	Channelized downstream, Agricultural
Fiddyment Creek	3.7	5	2.7	P	silt & gravel	--	--	Forested and agricultural areas
Big Run Creek	2.5	3	0.8	I	sand & clay	--	--	Forested and agricultural areas
Long Run	14.6	28	22.2	P	mud over gravel	4	Unbalanced	Residential, forested and agricultural areas
Illinois & Michigan Canal	14.6	55	N/A	PNF	bedrock covered with silt and organic muck	--	--	Industrial
Chicago Sanitary and Ship Canal	31.6	750	N/A	P	bedrock covered with sand and gravel	--	--	Extensive urban and industrial development
Des Plaines River	117.0	1,366	684.0	P	bedrock covered with sand and gravel	11	--	Extensive urban and industrial development
Black Partridge Creek	1.7	3	0.2	I	Mixture of gravel & sand	6	Semi-polluted	Expanding urban, agricultural, and forested areas

1/ Flow characteristics taken from U.S.G.S. topographic maps (Romeoville and Joliet Quadrangles).
I = Intermittent Flow; P = Permanent Flow; PNF = Pooled, No Flow.
2/ Data from Ceas, et al., 1989.
3/ Data from Wetzel, et al., 1990. Classification system based upon the numbers and kinds of aquatic macroinvertebrates collected and their assignment to one of four categories which reflect a species tolerance to a polluted environment.

TABLE 2-8
WATER QUALITY CHARACTERISTICS IN THE FAP ROUTE 340 CORRIDOR
BASED ON IEPA DESIGNATED USE CLASSIFICATION, WILL, COOK, AND DuPAGE COUNTIES, ILLINOIS [1/]

Stream	Designated Use				Causes[2/]	Sources[3/]
	Overall Use	Fish Consumption	Aquatic Life	Swimming		
Hickory Creek	Partial support, minor impairment	Use exists, no data available	Partial support, minor impairment	Non-support	Metals (M) Ammonia (M) Chlorine (M) Nutrients (M) Organic enrichment (M) Other habitat alterations (M)	Municipal point sources (M) Combined sewer overflows (M) Land development (M) Urban runoff/storm sewers (S) Flow regulation/modification(S) Industrial point sources (S)
Spring Creek	Partial support, minor impairment	Use exists, no data available	Partial support, minor impairment	Use exists, no data available	Siltation (M) Other habitat alterations (M) Nutrients (S) Suspended Solids (S)	Channelization (M) Dam construction (M) Agriculture (S) Urban runoff/storm sewers (S)
Long Run	Full support	Use exists, no data available	Full support	Use exists, no data available	--	--
Chicago Sanitary & Ship Canal	Nonsupport	Use exists, no data available	Nonsupport	Use does not apply to water body	Metals (M) Organic enrichment (M) Other habitat alterations (H) Nutrients (M) Pathogens (M)	Municipal point sources (H) In-place contaminants (H) Industrial point sources (S) Channelization (S) Combined sewer overflow (S)
Des Plaines River	Partial support, moderate impairment	Use exists, no data available	Partial support, moderate impairment	Nonsupport	Nutrients (H) Siltation (M) Organic enrichment (M) Metals (S) Oil & Grease (S)	Urban runoff/storm sewers (M) Channelization (S) Municipal Point Sources (M) Highway maintenance, runoff (S)

1/ Data taken from IEPA, 1994. Assessment Data from Spring Creek is 10 years old.
2/ Causes - indicates causes of impaired use and the magnitude to which the cause contributes to the use impairment; H = High; M = Moderate; S = Slight
3/ Sources - indicates the sources that contribute to the causes above and the magnitude to which the source contributes to the use impairment;
H = High; M = Moderate; S = Slight.

Fraction Run

Fraction Run is a tributary of the Illinois and Michigan Canal. The width of the stream varies from 6 to 10 feet and the depth averages 8 inches. A large pool 15 to 25 feet wide and 4 feet deep occurs upstream of the **recommended** crossing.

The substrate consists of 40 percent clay, 30 percent sand, and 30 percent gravel. Habitat consists of alternating series of shallow pools, riffles, and runs. The terrestrial habitat on the downstream side consists of rowcrop, while the upstream side has a corridor of woody vegetation. There are no IEPA data for this stream. Water quality sampling (Wetzel, et al., 1989) in May and September, 1987 and June, 1988 indicate that all parameters are within the General Use Water Quality Standards. Chloride concentrations ranged from 60 to 133 mg/l. The IEPA Aquatic Environmental Classification System classifies the stream as a semi-polluted to unbalanced environment. The bluntnose minnow (*Pimephales notatus*) and big mouth shiner (*Hybopsis dorsalis*) together comprised over 60 percent of the fish identified.

Fiddyment Creek

Fiddyment Creek flows north of 159th Street and drains a forested and agricultural area. The stream width is variable from 2 feet wide in the project area to 15 feet further downstream. A shallow stream of a few inches in depth, Fiddyment Creek is intermittent flowing only during rainfall and/or snowmelt. The stream was not sampled, and there are no data available from the IEPA or **IDNR**. Downstream of the project area the creek traverses through a residential development on the northeastern edge of Lockport. In the project area, the terrestrial vegetation is composed of woody riparian habitat with adjoining residences and a horse farm.

Big Run

Big Run is the smallest stream in the project area and is classified as intermittent. No flows were observed during the 1987 and 1988 field seasons. Flow apparently occurs during rainfall and/or snowmelt. There are no data available from IEPA or **IDNR** on this stream. The **recommended** project crosses the creek near its source - groundwater discharge from the marsh (Wetland Site 17) at the head of the drainage way. The stream channel is approximately 2 feet wide and traverses through a forested wetland (Wetland Site 18).

Long Run

Long Run flows westerly through the project area to its confluence with the Illinois and Michigan Canal just north of the oil refinery located north of Lockport. The stream in the project area is 13 feet wide and 4 to 8 inches deep with a substrate of mud over gravel and silt/detritus mixture in pools. Habitats present include a slow moving, shallow and turbid channel, undercut banks, and a few shallow (2 to 3 foot deep) pools. The terrestrial habitat surrounding the area consists of second growth woods with scattered homesteads.

Three wastewater treatment plants serving subdivisions are located in the Long Run watershed. The combined design average flow of the three wastewater plants is 1.8 mgd. The Illinois Environmental Protection Agency (IEPA) has established effluent limits for these discharges regarding chlorine residual, carbonaceous biochemical oxygen demand (CBOD), suspended solids, and ammonia.

The IEPA (Table 2-8) designated overall use rating for this stream is full support; however, the monitoring data used in this assessment is 10 years old. Water quality sampling in May, 1987; June, 1988 (Wetzel, et al., 1989); and February, 1995 (INHS, 1995) indicate that all parameters are within the General Use Water Quality Standards with the exception of iron which is ubiquitous in Illinois. It is noted that the chloride concentrations within the creek ranged from 168 to 343 mg/l. The IEPA Aquatic Environmental Classification System classifies the stream as an unbalanced environment. This is not a surprising condition given the development occurring in the watershed. Four species were identified in the project area with the bluntnose minnow, striped shiner (*Luxilus chrysocephalus*), and green sunfish (*Lepomis cynallus*) being the most common.

Des Plaines River Valley

The Des Plaines River Valley is one of the most highly modified drainage basins in the United States. Three "streams" flow through the Valley: Des Plaines River, the Chicago Sanitary & Ship Canal, and the Calumet-Sag Channel. Wastewater from the Chicago metropolitan area is treated and discharged to a system of waterways tributary to the Des Plaines River. Historically, the Chicago and Calumet Rivers (well east of the project area) were tributaries of Lake Michigan. To avoid contamination of Chicago's drinking water supply, a canal system was constructed which reversed the direction of flow away from Lake Michigan and to the Des Plaines River. Dilution of waste flows is provided by diversion of Lake Michigan water. The Chicago River flows into the Sanitary & Ship Canal and the Calumet River system flows into the Calumet-Sag Channel, which in turn flows into the Sanitary & Ship Canal near Lemont. The Sanitary & Ship Canal enters the Des Plaines River just north of Joliet.

Illinois and Michigan Canal

The Illinois and Michigan Canal once connected Lake Michigan with the Illinois River and was in operation from 1848 to 1900 for the transportation of goods. In 1871, Chicago built a pumping station to pump water and sewage into the Illinois and Michigan Canal from the Chicago River. When the Illinois and Michigan Canal was no longer adequate to conduct all of the city's wastes, the much larger Sanitary & Ship Canal was constructed parallel to it and was completed in 1900 and incorporated into the Illinois Waterway System in 1933. The I&M Canal, east of Joliet, was essentially abandoned in 1900. Since 1917, the Illinois and Michigan Canal, west of Joliet, has been generally abandoned and sections have been obliterated or damaged.

The Illinois and Michigan Canal in the project area is approximately 60 feet wide. The bottom is rock with a covering of organic muck. There is no flow within the canal at this location. The canal is bordered by railroad tracks on the north and a dolomite quarry and landfill on the south. Water

quality data were collected for the Illinois and Michigan Canal in 1995 and indicate satisfactory water quality.

Chicago Sanitary & Ship Canal

The Chicago Sanitary & Ship Canal is the second largest stream in the study area with a drainage area of 750 square miles. The bottom is rock with a covering of gravel and sand. The Chicago Sanitary & Ship Canal is classified as a secondary contact water by the IEPA. Secondary contact and the maintenance of indigenous aquatic life standards are intended for those waters not suited for general use activities, but which will be appropriate for secondary contact uses.

Primary uses relate to navigation, receiving wastewater effluent, and stormwater drainage. Because of its navigational significance, the Chicago Sanitary & Ship Canal has depths to 25 feet and is 150 feet wide to provide sufficient draft for barge traffic. The IEPA overall designated use rating for this canal is nonsupport.

Des Plaines River

The Des Plaines River originates in southeastern Wisconsin and flows southward through northeastern Illinois before it turns westward and parallels the Chicago Sanitary & Ship Canal in the project area (Exhibit 2-14). Downstream of the project area, the river merges with the Canal and, further down, the Kankakee River to form the Illinois River. The Des Plaines River receives treated industrial and municipal wastewater as well as drainage from nearly 700 square miles. It is classified as a general use stream for primary and secondary recreational contact; however, water quality violations of dissolved oxygen have occurred. A sport fish health advisory is in effect from Lockport to the Illinois River due to organochlorine contaminants. Upstream of the project area, stream sediments contain elevated levels of heavy metals and pesticides originating from combined sewer overflows and surface runoff.

The Des Plaines River (Tables 2-7 and 2-8) within the project area is channelized and is approximately 120 feet wide. The bottom is bedrock largely covered with sand and gravel with organic muck in places. On the north side of the river, a large wetland complex (see discussion under Wetland Site 43) is immediately adjacent to the river. On the south side is a strip of land approximately 750 feet wide that separates the river from the Sanitary & Ship Canal.

The overall designated use rating for the Des Plaines River is partial support, moderate impairment (Table 2-8). An adjoining upstream reach of the river has nonsupport. Degraded water quality conditions are common throughout most of Cook and Will Counties, primarily due to urban surface runoff, municipal and industrial discharges, and to a large extent combined sewer overflow, channelization and flow regulation (IEPA Water Quality Report 1988; April, 1993).

Water quality data were available for the Des Plaines River Lockport station from **United States Environmental Protection Agency's (**USEPA's**)** STORET Database. Chloride concentrations for the period 1988 to 1994 have averaged 190 mg/ l and ranged from a low of 67 mg/l to a high of 603

mg/l. Chloride concentrations are typically higher in January and February and lowest in the summer months. From 1988 through 1994, chloride concentrations exceeded 500 mg/l in four sampling events (December, 1988; January, 1989; January, 1991; and, February, 1994). Fluctuation in chloride levels appeared to be influenced by seasonal practices and meteorological conditions. There were infrequent excursions above the water quality standards for a few other parameters during the same period.

Black Partridge Creek

Black Partridge Creek is formed from two tributaries merging just north of abandoned Davey Road as shown on Exhibit 2-14B. One branch of the western unnamed tributary collects drainage from the southern loop of the current I-355/I-55 interchange ramps as well as agricultural fields. The easternmost tributary receives all drainage from a commercial development, a residential subdivision, and cultivated fields. The commercial development provides a continuous flow of water to the creek from a series of stormwater detention ponds along Internationale Parkway. At Davey Road the stream has an average width of 10 feet and a depth ranging from 4 inches to 4 feet. The substrate consists of a mixture of gravel and sand, with silt deposited in pools and the channel. Habitats include shallow pool-riffle-run sequences and undercut banks.

South of relocated Davey Road the Black Partridge Creek flows through the wooded areas of Lemont Woods **(Wood Ridge)** Forest Preserve (DuPage County) and as it enters the adjacent Black Partridge Forest Preserve (Cook County) the change in gradient becomes evident as the stream passes down through the bluffs. Under normal conditions, springs from the bluffs feed the creek. In the lower one mile segment, springs and increased gradient transform the creek from a warm, turbid, low-gradient stream into a cool, clear, relatively high gradient stream. South of Bluff Road the stream dissipates into the wetlands complex of the Des Plaines River.

A water quality monitoring program implemented by IDOT (See Section 6.5.2) from January, 1994 to April, 1995 sampled a host of chemistry parameters from a number of sites within the Black Partridge Creek watershed. For the most part, the parameters were within the Illinois General Use Water Quality Standards. The exceptions were chloride and total dissolved solids (TDS). The sampling site near Davey Road (See Exhibit 2-14B) had an average chloride concentration during the period of 380 mg/l with a low of 98 mg/l and a high of 1,232 mg/l. Of the 15 samplings, there were 2 excursions over 500 mg/l (the Illinois General Use Standard). TDS at this site averaged 1,022 mg/l with a low of 284 mg/l and a high of 2,244 mg/l. Of the 15 samplings, there were 6 excursions over 1,000 mg/l (the Illinois General Use Standard). The sampling site just north of Bluff Road in the Black Partridge Nature Preserve had an average chloride concentration of 211 mg/l with a low of 105 mg/l and a high of 341 mg/l. The TDS average concentration was 849 mg/l with a low of 396 mg/l and a high of 1,096 mg/l. There were no chloride excursions, but there were 3 TDS excursions above 1,000 mg/l.

Quarterly monitoring of the fish within the creek indicate that the mottled sculpin still exists within the stream as well as the large scale stoneroller (*Campostoma oligolepis*), central stoneroller

(*Campostoma anomalum*), creek chub (*Semotilus atromaculatus*), bluntnose minnow (*Pimephales notatus*), and green sunfish (*Lepomis cyanellus*).

Black Partridge Creek's spring run, seeps, and springs are considered one of the exceptional features within the Black Partridge Nature Preserve. The mottled sculpin (*Cottus bairdi*) occurs within the Black Partridge Nature Preserve and some of the channels south of Bluff Road. The mottled sculpin appeared only in the segment flowing through Black Partridge Nature Preserve and in the Black Partridge channel south of Bluff Road. The Black Partridge Creek is one of two known locations for the mottled sculpin in the Des Plaines River basin. Within Illinois, the sculpin is relatively common in a few tributaries of the Fox River, but is extremely sporadic elsewhere.

2.11.3 Wetlands

The four township area contains approximately 4700 acres of palustrine wetlands representing 5.2 percent of the land surface (Table 2-10). Most of the wetlands are associated with the Des Plaines River and its tributaries (Exhibit 2-14), although a few wetland areas occur as small, isolated basins. A total of 44 potential wetlands were evaluated within the corridor using the Army Corps of Engineers' Delineation Manual (Environmental Laboratory, 1987); however, **nine** sites were ultimately deleted as being non-jurisdictional. Only 3**5** of the **original** 44 sites **[word deleted] were** identified **as** jurisdictional wetlands. The **35th** site originally designated as Wetland 42 **is considered to be** a seep area **(Black Partridge Seep) and** is discussed separately in Section 2.11.5. Wetland characteristics of the **remaining** 3**4** jurisdictional wetlands are summarized in Table 2-11 and depicted on Exhibits 2-12 to 2-14.

These 3**4** wetland areas are summarized by type and size in Table 2-9.

One wetland (Wetland 43) contains both emergent and forested areas over several miles. For the purpose of describing this wetland, only the area within the project area is used. Based on sensitivity and species diversity, 6 wetland areas (sites 9, 17, 18, 20, 43, and 44) are considered important and are described in the following paragraphs.

An additional wetland is described, Wetland 45, which was previously mitigated for under the Section 404 permit for the original North-South Tollway project.

Table 2-9
Summary of Palustrine Wetlands

NO. OF WETLANDS	WETLAND TYPE	NO. OF ACRES
1**4**	Emergent	11**3.0**
6	Unconsolidated bottom	2.**8**
2	Farmed	**1.4**
7	Forested wetlands	4**7.5**
5	Excavated	2.**9**
Totals 34		**167.6**

Wetland 9

Wetland site 9 is a **13.1**-acre complex of marsh, sedge meadow, wet shrubland, and forested areas. The complex (Exhibit 2-12) is an isolated wetland completely surrounded by cropfields on the north side of 167th Street and a golf course south of 167th Street. The wetland is crossed by two roads (Gougar Road, 167th Street). **[sentence deleted]** The sedge meadow has a high species diversity, including many plants rarely found in disturbed areas. This area is dominated by hummock sedge. The forested area west of the sedge meadow contains a number of invasive non-native woody species (white poplar (*Populus alba*), common buckthorn (*Rhamnus cathartica*), European cranberry bush (*Viburnum opulus*)). West of the forested area is a marsh that includes a large stand of common cattail (*Typha latifolia*), but also larger stands of water smartweed (*Polygonum amphibium*) and common burreed (*Sparganium eurycarpum*). A mixture of marsh, wet shrubland, and forest occurs south of 167th Street.

The Natural Area Rating Index (Swink and Wilhelm, 1979 and 1994) is one way to help assess the ecological integrity of the site. For the Chicago region, Swink and Wilhelm have placed a numeric value on each native plant species. An index value is obtained by dividing the sum of the individual plant species values by the square root of the number of species. The vast majority of land in the Chicago region registers *I* values less than 20 and essentially has no significance from a natural area perspective. Areas with *I* values higher than 35 possess sufficient conservatism and richness to be of profound importance from a regional perspective (Swink and Wilhelm, 1979). The index value for the wetland complex is 28.1, which is much higher than those calculated for other wetland sites in the corridor. The main reason the wetland complex rates higher than the other sites is because it includes several different wetland types, which allows greater species diversity overall (Tessene, Morris and Brooks, 1992).

The site contains a large population of striped chorus frog (*Pseudacris triseriata*) as well as American toad (*Bufo americanus*) and northern leopard frog (*Rana pipiens*) (Brown, 1988). During the breeding bird census (June, July), a total of 15 bird species representing 53 individuals were observed (Malmborg and Vanderah, 1989). Mourning dove (*Zenaida macroura*), song sparrow

(*Melospiza melodia*), common yellowthroat (*Geothlypis trichas*), cedar waxwing (*Bombycilla*), and American robin (*Turdus migatorius*) accounted for over one-half of the individuals.

Wetland 17

Wetland site 17 is a marsh from which Big Run Creek originates. This 3.9 acre site is surrounded by floodplain forest of wetland site 18 and provides an important flood storage and sediment trapping function. Predominant vegetation includes black willow (*Salix nigra*), water smartweed, and river bulrush (*Scirpus fluviatilis*) with a Natural Area Rating Index of 13.2. Mallards have been observed within the wetland marsh, and wildlife habitat is provided by this floodplain marsh.

Wetland 18

Wetland site 18 is also associated with the Big Run floodplain north of 151st Street and is composed of **8.6** acres of floodplain forest. Dominant species include green ash (*Fraxinus pennsylvanica*), cottonwood (*Populus deltoides*), and tartarian honeysuckle (*Lonicera tatarica*). The Natural Area Rating Index is 8.1. The forested area has been selectively cut. Because this area is at about the same elevation as Big Run, the wetland provides flood storage and sediment trapping for the creek.

Wetland 20

Wetland site 20 is a floodplain forest located east of the intersection of 135th Avenue and 146th Place. This 4.6 acre wetland lies just east of the Lockport Heights subdivision and is bounded by forested and agricultural areas. Situated at the headwaters of two streams, standing water pools up to a depth of two feet. Dominant species include silver maple (*Acer saccharinum*), swamp white oak (*Quercus bicolor*), and button bush (*Cephalanthus occidentalis*). The wetlands Natural Area Rating Index is 11.9.

Wetland 43

Wetland site 43 which is approximately 102 acres in size occurs on the north and west bank of the Des Plaines River (Exhibit 2-14) and extends far beyond the project corridor. The wetland within the project area is under the ownership of the Forest Preserve Districts of Will County (Keepataw Preserve) and Cook County. A Commonwealth Edison high-tension corridor and accompanying access road runs roughly northeast-southwest across the wetland. Most of the site was a limestone quarrying operation from 1889 to 1918. Although the Valley floor is flat, quarrying has produced ponds and large spoil piles. Old access roads occur throughout some portions of the wetland.

The vegetation within wetland site 43 can be grouped into several plant communities: marsh, pond, wet shrubland, and forest (Exhibit 2-15). The marsh, containing over 63 acres in the project area, is dominated by cattails (*Typha angustifolia, Typha latifolia*), rice cut grass (*Leersia oryzoides*), and canary reed grass (*Phalaris arundinacea*). The Natural Area Rating Index is 28.0. The marsh community includes scattered shrubs and trees, some of which are dead (snags). Ponds and

drainage channels occur throughout the marsh. Water levels vary between 0 and 3 feet, and large areas remain inundated or saturated throughout the year. The marsh lies within the 2-year floodplain and is annually flooded by the Des Plaines River during winter and early spring.

The ponds, approximately 1.4 acres in size, may have been created when limestone was quarried in the surrounding area and always contain water. The ponds contain such aquatic plant species as coontail (*Ceratophyllum demersum*), duckweed (*Lemna minor*), pondweed (*Potamogeton sp.*), and blatterwort (*Utricularia vulgaris*). The ponds are bordered by wet shrubland and marsh.

The wet shrubland community is located along the margins of the marsh and pond communities and is approximately 11 acres in area. Patches of marsh vegetation and scattered trees are also found within the community. The dominant shrubs in this community are blue dogwood (*Cornus obliqua*), wild black currant (*Ribes americanum*), and sandbar willow (*Salix exigua*). The Natural Area Rating Index for this community is 23.0.

The forested community occurs along the Des Plaines River (approximately 21.4 acres in size) where it is interspersed with marsh vegetation. Other areas of forest occur along the limestone spoil areas (Exhibit 2-15) and is about 5.3 acres in size. The dominant species in this community are silver maple (*Acer saccharum*), cottonwood (*Populus deltoides*), black willow (*Salix nigra*), and box elder (*Acer negundo*). The Natural Area Rating Index for this community is 10.0.

Several state-listed bird species (Great egret and Black-crowned night heron) forage in the marsh and use the forested wetlands adjacent to the spoil piles for resting. Open water areas are utilized by waterfowl.

Nineteen species of fish were collected within the wetland site. Mosquitofish and green sunfish were the most common species collected. The black-stripe topminnow (*Fisndislus notatus*), golden shiner (*Notemignys crysolencus*), and central mudminnow were the next most common species.

Characteristic macroinvertebrate species included oligochaete worms, isopod crustaceans, water boatmen, midges, and snails. A few areas provided habitat for caenid mayflies, dragonflies, phryganeid caddisflies, and crawling water beetles.

Water quality data were collected from various locations in wetland site 43 including pools, and channels along the Commonwealth Edison power line. Chloride concentrations ranged from 82.5 mg/l to 363 mg/l and vary seasonally. Several water quality parameters within the wetland were not within the state water quality standards. These include: dissolved oxygen (never less than 5.0 mg/l DO standard) concentrations ranged from 0.37 mg/l to 8.15 mg/l and total dissolved solids (1000 mg/l standard) ranged from 691 mg/l to 1100 mg/l.

TABLE 2-10
ACREAGES AND PERCENT OF TOTAL AREA OF WETLANDS OCCURRING WITHIN THE TOWNSHIPS OF THE FAP ROUTE 340 PROJECT AREA, WILL, COOK, AND DuPAGE COUNTIES, ILLINOIS[1/]

Townships:	DuPage		Homer		Lemont/Downers Grove		New Lenox		Totals	
Wetland Class[2/]	Area (acres)	% of Total Area	Area (acres)	% of Total Area	Area (acres)	% of Total Area	Area (acres)	% of Total Area	(acres)	Total Area
PAB	0.0	0.0	35.4	0.2	39.5	0.2	0.4	0.0	75.3	0.0
PEM	1,151.0	5.1	389.2	1.7	912.4	1.1	238.7	1.1	2,691.3	3.0
PFO	332.5	1.5	180.6	0.8	505.7	2.2	259.8	1.2	1,278.6	1.4
PSS	97.7	0.4	18.2	0.1	141.5	0.6	20.5	0.1	277.9	0.3
POW	0.0	0.0	0.0	0.0	177.5	0.8	18.4	0.1	195.9	0.2
PUB	173.4	0.8	7.0	0.0	42.4	0.2	4.1	0.0	226.9	0.3
PUS	1.7	0.0	0.4	0.0	8.1	0.0	0.0	0.0	10.2	0.0
Lacustrine	186.7	0.8	0.0	0.0	173.5	0.8	0.0	0.0	360.2	0.4
Riverine	259.7	1.2	4.0	0.0	494.3	2.2	21.9	0.1	779.9	0.9
Upland	20,488.3	90.3	22,184.9	96.7	20,213.7	89.0	21,716.0	97.5	84,646.9	93.4
TOTALS	22,691.1	100.0	22,934.2	100.0	22,708.7	100.0	22,279.1	100.0	90,613.1	99.9

1 Acreages from the National Wetlands Inventory Database (Lisowski 1993). Data has been rounded off to nearest tenth.

2 Wetland class from NWI maps and Cowardin et al. (1979) P = Palustrine; AB = Aquatic Bed; EM = Emergent; FO = Forested; SS = Scrub-Shrub; OW = Open Water; UB = Unconsolidated Bottom; US = Unconsolidated Shore; Lacustrine = Lakes; Riverine = Streams, Rivers.

TABLE 2-11
SUMMARY OF WETLAND CHARACTERISTICS IN THE FAP ROUTE 340 PROJECT AREA, WILL, COOK, AND DuPAGE COUNTIES, ILLINOIS

Map[2/] No.	NWI Classification[3/]	SCS Classification[4/]	Predominant Vegetation	Soil Type[5/]	Natural Areas Basin Structure	Rating Index[6/]	Functional Valves[7/]	Wetland Size, acres
1	PEMC	W	Swamp tickseed water smartweed river bulrush	Ashkum	Depression in crop field	10.4	Sediment and nutrient trapping migrating water fowl	1.0
2	PEMCd	FW/TD	Water smartweed pale smartweed giant foxtail	Drummer	Depression in crop field	4.9	Sediment and nutrient trapping	**0.8**
6	ND(PEMC)	W	Sandbar willow calico aster reed canary grass	Ashkum	Depression in crop field	5.8	Sediment and nutrient trapping	0.6
8	PEMAf	FW/TD	Water smartweed cocklebur	Ashkum	Depression in crop field	2.0	Sediment and nutrient trapping	0.6
9	PEMC/PFO1C	W	Gray dogwood blue joint grass hummock sedge	Ashkum	Depression surrounded by crop fields	28.1	Sediment and nutrient trapping wildlife habitat	13.1
10	PEMC	W	Cottonwood mud plantain reed canary grass	Ashkum	Depression in crop field	9.2	Waterfowl	5.1
11	PEMA	W	Common smartweed yellow foxtail	Ashkum	Depression surrounded by subdivision	2.0	Sediment trapping	0.9
12	PEMC	W	Black willow reed canary grass	Ashkum	Depression	4.9	Sediment and nutrient trapping	1.**1**
13	$PUBG_x$	W	Common reed common cattail	Undetermined	Depression (maintained ponds)	4.9	Sediment and nutrient trapping	1.1
14	$PUBG_h$	W	Cottonwood sandbar willow reed canary grass	Undetermined	Depression (pond)	2.0	Sediment and nutrient trapping	0.8
16	$PUBF_x$	W	Sandbar willow lamb's quarter barnyard grass	Undetermined	Depression (pond in active horse pasture)	0.9	Sediment and nutrient trapping	0.**5**

TABLE 2-11 (Continued)
SUMMARY OF WETLAND CHARACTERISTICS IN THE FAP ROUTE 340 PROJECT AREA, WILL, COOK, AND DuPAGE COUNTIES, ILLINOIS

Map[2/] No.	NWI Classification[3/]	SCS Classification[4/]	Predominant Vegetation	Soil Type[5/]	Natural Areas Basin Structure	Rating Index[6/]	Functional Valves[7/]	Wetland Size, acres
17	PFO1C/ND(PEM)	W	Black willow water smartweed river bulrush	Ashkum	Along Big Run Creek	13.2	Sediment trapping flood storage wildlife habitat	3.9
18	PFO1C	W	Green ash cottonwood tartarian honeysuckel	Ashkum	Along Big Run Creek	8.1	Sediment trapping flood storage	**8.6**
20	ND(PFO)	W	Silver maple swamp white oak button bush	Ashkum	Headwaters of two streams	11.9	Flood storage	4.6
21	ND(PFO)	ND	Swamp white oak button bush poison ivy	Ashkum	Swale within upland forest	9.0	Flood storage wildlife habitat	0.2
22	ND(PEM)	ND	Black willow green ash sandbar willow	Ashkum	Depression surrounded by cropland	7.6	Sediment and nutrient trapping	0.6
23	ND(PFO/SS)	W	Cottonwood blue dogwood riverbank grape	Ashkum	Floodplain	11.7	Sediment trapping flood storage	1.**9**
24	ND(PUB)	ND	White weeping willow/blue dogwood duckweed	Undetermined	Depression (pond)	9.2		0.1
25	ND(PEM)	ND	Blue dogweed blue joint grass hummock sedge	Ashkum	Depression	14.7	Small site with high diversity	0.1
26	$PUBG_x$	W	Black willow beggar's tick common cattail	Undetermined	Depression (pond)	4.3	Sediment trapping flood storage	0.**5**
28	PUBG	W	Box elder sandbar willow common cattail	Undetermined	Depression (pond)	4.4	Wildlife support	1.0

TABLE 2-11 (Continued)
SUMMARY OF WETLAND CHARACTERISTICS IN THE FAP ROUTE 340 PROJECT AREA, WILL, COOK, AND DuPAGE COUNTIES, ILLINOIS

Map[2/] No.	NWI Classification[3/]	SCS Classification[4/]	Predominant Vegetation	Soil Type[5/]	Basin Structure	Natural Areas Rating Index[6/]	Functional Valves[7/]	Wetland Size, acres
30	PEMC	W	Black willow reed canary grass common cattail	Ashkum	Depression surrounded by cropland	3.5	Sediment and nutrient trapping	0.9
31	PEMC	W	Barnyard grass reed canary grass cocklebur	Ashkum	Depression in cropland	3.6	Sediment and nutrient trapping; waterfowl foraging	1.4
32	ND(PFO)	ND	Cottonwood box elder calico aster	Ashkum	Depression	7.0	Wildlife support	1.6
33	PEMC	ND	Quack grass redtop blue joint grass	Ashkum	Depression	8.0	Flood storage, wildlife habitat	1.1
34	ND(PUB)	W	White weeping willow beggar's tick blue joint grass	Ashkum	Depression (pond)	7.2	Flood storage, wildlife habitat	0.2
35	PUBG	AW	Purple loosestrife reed canary grass common cattail	Undetermined	Depression (pond surrounding industrial land)	1.2	Sediment trapping waterfowl habitat	0.4
36	$PUBG_x$	AW	Red-osier dogwood common cattail	Undetermined	Depression	4.1	Wildlife support	0.4
37	**PUBF**	**AW**	**Box elder common cattail**	**Undetermined**	**Partially filled depression**	**3.8**	**Sediment trapping**	**0.3**
38	$PUBG_x$	AW	Black willow box elder reed canary grass	Drummer	Depression	5.6	Flood storage	0.4
39	PEMC	W	Cottonwood black willow sandbar willow	Drummer	Within headwaters of branch of Black Partridge Creek	13.3	Sediment and nutrient trapping flood storage	1.3

TABLE 2-11 (Continued)
SUMMARY OF WETLAND CHARACTERISTICS IN THE FAP ROUTE 340 PROJECT AREA, WILL, COOK, AND DuPAGE COUNTIES, ILLINOIS

Map[2/] No.	NWI Classification[3/]	SCS Classification[4/]	Predominant Vegetation	Soil Type[5/]	Basin Structure	Natural Areas Rating Index[6/]	Functional Valves[7/]	Wetland Size, acres
41	PEMAf	W	Black willow panicled aster water smartweed	Drummer	Depression at edge of farm field	6.8	Sediment and nutrient trapping	0.**8**
43	PFO1C/PEM	W	Box elder cottonwood black willow	Sawmill	North flood plain of Des Plaines River	20.3 to 33.4	Sediment and nutrient trapping; flood storage; wildlife habitat	26.7/75[8/]
44	PEM/PSS-		Reed canary grass Box elder Rice cutgrass	Romeo	South flood plain of Des Plaines River	-	Sediment trapping; flood storage; wildlife habitat	10

1/ All potential wetlands within 1,000 feet of the proposed centerline were examined and 44 routine on-site wetland determinations were performed using the three parameter criteria (Environmental Laboratory 1987). Delineations from Tessene et al. (1992).

2/ Wetlands keyed to map (Exhibits 2-12, 2-13, and 2-14).

3/ Wetland Class as depicted on National Wetland Inventory (NWI) maps (Joliet and Romeoville Quadrangles) Place key to classification here: ND (Not depicted on maps); NWI codes in parenthesis from Tessene et al. (1992).

4/ Wetlands as depicted on Soil Conservation Service (SCS) maps key: W (Wetland); FW/TD (Farmed Wetland, tile drained); AW (Artificial wetland); ND (not depicted on maps).

5/ All soil types listed are hydric soils. Soil types from field observations (Tessene et al. (1992)). "Undetermined" indicates that the site is permanently flooded and that soil characterization was not done. The soil is considered saturated for a long duration during the growing season and, therefore, meets the hydric soil criterion.

6/ The Natural Area Rating Index as developed by Swink and Wilhelm (1979). See text.

7/ Functional values derived from observation. See text.

8/ This wetland extends in size for 10 miles along the Des Plaines River. The size of forested and emergent areas refer to the project area only.

Water quality data taken from the river between January, and November, 1994 were compared to data taken in the wetland at the five sampling points between May, and October, 1994. These data shows chloride levels in the Des Plaines River slightly lower than in the wetland for the months where data are available for both water bodies. Chloride levels decrease at the same rate through time in both the wetland and the river. Data were unavailable for the wetland in January and February, when high chloride levels may appear. The seasonal variance of the chloride level in the wetland correlates with the change in chloride concentration that occurs in the river. Exhibit 2-14A plots the chloride levels along the power line versus those in the Des Plaines River for the 1994 sampling period.

Wetland 44

Wetland site 44 (**10.0** acres in size) is a marsh located between the Des Plaines River and the Chicago Sanitary and Ship Canal in the project corridor. Past disturbances to the area are related to the construction of the Chicago Sanitary and Ship Canal and include the exposing of limestone flats, creating ponded areas and heaping spoil. Dominant species include the common cattail (*Typha latifolia*), rice cutgrass, and reed canary grass. Occasional trees and shrubs consist of green ash (*Fraximus pennsylvanica*), box elder, and silver maple. The Natural Area Index for the marsh community is 36.4. A state-listed plant species, the slender sandwort (*Arenaria patula*), and a rare sedge (*Carex atherodes*) are found within this wetland area.

Wetland 45

Wetland site 45 is a 1.2 acre palustrine emergent wetland located north of I-55 and east of I-355. It was described in the original North-South Tollway Environmental Impact Statement as a shallow wetland dominated by emergent vegetation such as cattails (*Typha latifolia*), sedges (*Carex sp.*), and willows (*Salix sp.*). This area provides low quality wildlife habitat and no wildlife species were observed. The Natural Area Rating Index is 14. This site was considered to be impacted by the original North-South Tollway and impacts for the entire 1.2 acres were previously mitigated for under the Section 404 permit for that project.

2.11.4 Floodplains

Identified floodplains are shown on Exhibits 2-12 to 2-14. The 100-year floodplain was based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Studies and Flood Boundary and Floodway maps. Spring Creek and the Des Plaines River have been identified by the Illinois Department of **Natural Resources - Office** of Water Resources as the only regulatory floodways in the project area.

Exhibit 4-8 depicts the floodplain boundaries in the Des Plaines River Valley for periodic flooding occurrences. The two-year, five-year, and 50-year floodplain boundaries are closely marked because of the flat elevations in this area. Most of these occurrences extend near the bluffs positioned near Bluff Road.

2.11.5 Seeps

Seep areas occur at groundwater discharge locations within the study area. Groundwater seeps have been identified near Black Partridge Creek, Big Run, Long Run, and along the bluff in the Des Plaines River Valley. Some seep locations in the project area are identified on Exhibit 2-14B.

Black Partridge Seep

A seep along Black Partridge Creek occurs within the Black Partridge Nature Preserve. A groundwater study completed for Black Partridge Creek by the Illinois State Geological Survey (Predicted Impacts of a New Highway on a Spring-Fed Wetland, 1992) indicated that seeps exist because the water table intersects the land surface. The seeps overlie 15 feet of sand and gravel, below which dolomite bedrock occurs as shown in Exhibit 2-10. The hydrology of the seep is affected by the elevation of the water table. During drought conditions, the seeps do not flow because of the decline in the water table.

Water quality of the Black Partridge seep is similar to groundwater with total alkalinity of 320 mg/l (measured as mg/l $CaCO_3$), low turbidity, pH of 7.8, and chlorides of 63 mg/l (Wetzel, 1989). Sampling in 1994 of the tributary emanating from groundwater flow at the base of the small bluff (Taylor, et al., 1994) showed similar characteristics with alkalinity of 342 mg/l (as $CaCO_3$), low turbidity, and chlorides of 125 mg/l. All reported concentrations achieved the General Use Water Quality Standards for Illinois.

Des Plaines River Seeps

Water quality and vegetation information was collected to describe the seep areas along the base of the bluff where the bluff meets the Des Plaines River floodplain. Localized areas of wedge-shaped gravelly slopes occur along the base of the bluff. These deposits appear to be colluvium from the adjacent Lemont drift and Wadsworth till exposed along the Valley wall. The local gravel slopes are porous and occur at the contact zone of the exposed glacial drift and bedrock and are groundwater discharge zones.

Dolomitic berms, probably resulting from quarrying activities, run parallel to and occur between Wetland 43 and the base of the bluff. The berms are not continuous, but do restrict the flow of seep water away from the bluffs, resulting in the pooling of the discharge and flow along the base of the berms.

The seeps support a noteworthy botanical community, described in detail by Taft (1991) and Tessene and Morris (1992). The seeps between the bluff and the berms are characterized by relatively intact native plant communities. Taft noted the presence of five native species of willow together with 93 native vascular plant species and believed this wetland community to not be of recent origin. Furthermore, many of the species are confined in Illinois to calcareous seep habitats, and because of the level of development in northeastern Illinois, are uncommon species to the state. Tessene and Morris (1992) found that the NARI for a typical seep was 25.7.

Six seeps were selected for the characterization of water quality, macroinvertebrate, and fish communities. Water quality sampling of the seeps during 1994 indicates the calcareous nature of the discharge. Alkalinity values ranged from 186 mg/l to 402 mg/l (as $CaCO_3$) and dissolved solids of 412 mg/l to 932 mg/l. Dissolved oxygen ranged from 0.48 mg/l to 13.4 mg/l. The mean dissolved oxygen levels in five of the seeps varied from 2.8 mg/l to 3.9 mg/l. Seep 6 was the only one where dissolved oxygen levels were maintained above 5.0 mg/l. Chloride concentrations were reported from 38.2 mg/l to 111 mg/l for the six seep locations (Taylor, et al., 1994). No fish were observed in the seep area. The macroinvertebrate assemblage of the seeps is dominated by oligochaete worms, amphipods, isopods, and chironomid diptera.

2.12 Biological Resources

2.12.1 Vegetation and Cover Types

The vegetative cover types distinguished within the FAP Route 340 project area are given in Table 2-12. The dominant cover types are developed and cropland which represent almost 63 percent of the project area. The most important cover types for wildlife are the wetlands (5.9%), upland forest (10.2%), and shrubland (7.4%).

The wetlands have been discussed in Section 2.11.3. Upland forest is scattered throughout the northern half of the project area. The most important forested area stretches along the north bluff of the Des Plaines River Valley for approximately 6,000 feet. Most of this forested area is located within three forest preserves (Cook, DuPage, and Will Counties) while the remainder is in private ownership.

The forest of the Black Partridge Nature Preserve (Exhibit 2-6), in general, appears to be mature to old second-growth, with diameters of canopy trees ranging from 14 to 26 inches. An examination of old aerial photographs indicate that this woodland has been protected from grazing disturbances for well over 50 years. The dominant canopy is composed of red and white oak in the uplands and sugar maple and basswood in the ravines and terraces. The subcanopy is composed of gray dogwood, ironwood, sugar maple, American ash, basswood, and shagbark hickory. The shrub stratum is dominated by blackhaw, European highbush cranberry, bladdernut, elderberry, virginia creeper, poison ivy, and yellow honeysuckle This woodland has a very rich spring flora, particularly on the slopes and terraces along the creek. Some of the herbaceous species include white barberry, wild sarsaparilla, wild ginger, shooting star, Pennsylvania sedge, sharp-lobed hepatica, and bellwort (Taft, 1989).

The adjacent forested area to the west of the nature preserve has similar canopy composition. However, this site has a long grazing history. Grazing evidently stopped at this site about 25 years ago and a regrowth subcanopy of wild black cherry, slippery elm, downy hawthorn, butternut hickory, red mulberry, sugar maple, and American ash has developed.

Nevertheless, many spring ephemerals are present. Also, two small, 15 feet by 30 feet, openings in regrown forested pasture are dominated by a few prairie species (Taft, 1989).

Table 2-12
Acreage and Percentage of FAP Route 340 Project Area By Cover Type

Cover Types	Acreage In Project Area	Percentage In Project Area
Developed	2199.8	22.7
Cropland	3896.5	40.2
Hayland	167.8	1.7
Pasture	86.6	0.9
Non-native Grassland	163.9	1.7
Forbland	622.3	6.4
Savanna	42.3	0.4
Upland Forest	982.6	10.2
Shrubland	713.1	7.4
Tree Plantation	128.2	1.3
Prairie	5.8	0.1
Emergent Wetland	31.4	0.3
Scrub-shrub Wetland	313.5	3.2
Forested Wetland	203.1	2.1
Unconsolidated Bottom Wetland	10.8	0.1
Excavated/impounded Wetland	18.9	0.2
Lower Perennial Stream	36.5	0.4
Upper Perennial Stream	16.8	0.2
Canal	47.0	0.5
Intermittent Stream	--	--
Totals	**9686.9**	**100.0**

Note: Cover type classification is a modification of U.S. Fish and Wildlife Service (1980).

This forested area continues westward where residences occur within the forested area north of Bluff Road. South of Bluff Road, a portion of this upland forest occurs within the Keepataw Preserve of Will County. The forest here is former oak savanna. Open-grown bur oak dominates or is codominate with white oak. Canopy tree diameters occur up to 48 inches (Taft, 1990). The height of the canopy south of Bluff Road is about 60 feet.

Four other upland forest stands occur within the middle section of the FAP Route 340 corridor. The first site occurs north of 151st Street and is associated with wetland site 18 and Big Run (Exhibit 2-13). This 98-acre site has a density of 420 trees per acre. Numerous mature apple trees occur in a portion of this stand. The dominant canopy species include American elm, bur oak, white oak, and wild black cherry. Subcanopy and shrub species consisted of common buckthorn, gray dogwood, multiflora rose, and poison ivy. The second tract is located south of 143rd Street and is associated with wetland site 20 (Exhibit 2-13). This 45 acre site is dominated by American elm, black walnut, box elder, and wild black cherry. Gray dogwood, multiflora rose, and several other shrubby, viney taxa created a dense understory.

The third tract is approximately 50 acres located south of 127th Street near the Commonwealth Edison right-of-way. This area includes shrubland areas as well. The fourth large upland is the 100-acre stand south of New Avenue. The age and contents of the forest tract varies south of the bluff. American elm, box elder, hawthorn and slippery elm are present and a small stand of white oaks are adjacent to an abandoned home site.

Shrubland is scattered throughout the corridor and occurs mostly in small tracts. The largest tract is located along the south bluff of the Des Plaines River Valley.

Des Plaines River Valley

A more detailed analysis of the cover types and communities present in the Des Plaines River Valley is presented because of the quality of natural areas occurring in the Valley. A survey of the area located between New Lemont Road on the south and Bluff Road on the north and within 1000 feet of the **preferred** centerline of FAP Route 340 identified 7 plant communities: marsh, pond, seep, wet shrubland, floodplain forest, shrubland, and upland forest. Table 2-13 summarizes the acreages of each community. Exhibit 2-15 depicts the locations of each community and illustrates the fragmentation within the Valley.

Four of the community types can be grouped under wetlands and were discussed above in Section 2.11.3. The four wetland communities are 1) a large marsh north of the Des Plaines River (A1 on Exhibit 2-15) that includes ponds, wet shrubland borders, and floodplain forests along the Des Plaines River; 2) a large marsh between the Des Plaines River and the Chicago Sanitary & Ship Canal (A2 on Exhibit 2-15) that includes wet shrubland and floodplain forests; 3) a floodplain forest (E1 and E2 on Exhibit 2-15) that is isolated from wetland complex 1 by large spoil piles produced in former quarrying operations; and, 4) a seep and spring run community (C on Exhibit 2-15) fed by groundwater. The four wetland systems are part of a larger wetland complex that extends along the Des Plaines River. These wetland areas contain many native plant species and tend to be less disturbed than the upland forests which are mostly located on abandoned quarrying spoils.

Four areas of shrubland are delineated as areas F1, F2, F3, and F4 on Exhibit 2-15. These shrubland areas represent approximately 5 percent of the total community type in the Des Plaines Valley study area.

Community F1 is small "islands" of upland plant community located along old access roads leading to the marsh community A1. Common species include box elder (*Acer negundo*), blue dogwood (*Cornus obliqua*), and gray dogwood (*C. racemosa*).

Community F2 is the largest shrubland segment and is composed of young woody regrowth on areas where spoil from past limestone quarrying was deposited. A nearly impenetrable thicket of honeysuckle (*Lonicera spp.*) shrubs dominates the site. Few trees or herbaceous species are present. Included in this community are scattered small ponds that are remnants of past excavations, and this community borders the marsh and wet shrubland to the south.

Shrublands F3 and F4 are just south of Bluff Road. Shrubland F3 is regrowth on a crop field or pasture abandoned one or two decades ago. Dominant saplings and shrubs are box elder and common buckthorn (*Rhamnus cathartica*); dominant herbs are brome grass (*Bromus inermis*) and tall goldenrod (*Solidago canadensis*). Scattered trees are common in the western part of the shrubland F4 community, and shrub cover is dense throughout. Tree species include box elder, black walnut (*Juglans nigra*), cottonwood (*Populus deltoides*), and bur oak (*Celtis occidentalis*); these are also present in the sapling and shrub layers.

Two upland forest segments (G1 and G2 on Exhibit 2-15) comprise 13 percent of the Des Plaines River Valley study area. G1 is located at the northwestern edge of the project area, and G2 is in the northern central part of the project and other scattered locations.

Community G1 is composed of mature open grown oaks and walnuts located on the bluff north of the Des Plaines River Valley. Some oaks may be over 100 years old. Past disturbances in this community that affect the species composition include grazing, quarrying, logging, and fire exclusion. Because of these disturbances, weedy species tend to dominate the understory of this forest. Dominant tree and sapling species include black walnut, bur oak, wild black cherry (*Prunus serotina*), and slippery elm (*Ulmus rubra*), while dominant shrubs are box elder, hawthorn (*Crataegus sp.*), and Amur honeysuckle (*Lonicera maackii*). Occasional woody vines include Virginia creeper (*Parthenocissus quinquefolia*), bristly greenbrier (*Smilax hispida*), and riverbank grape (*Vitis riparia*).

Community G2 is composed of regrowth forest on areas where spoil from past limestone quarrying was deposited. This cover type includes forests on steeply sloping terrain as well as on relatively low level areas. Because box elder is the dominant tree, the more level parts of this community bear some resemblance to a floodplain forest, but flooding in this community is very unlikely. The oldest trees date to the end of limestone quarrying 40 to 50 years ago. Shrubs are uncommon, but weedy herbaceous species are abundant. Dominant herbaceous species are garlic mustard (*Alliaria petiolata*) and white avens (*Geum canadense*).

TABLE 2-13
Total Acreage in Des Plaines Valley by Community Type*

Community Symbol	Communities Present	Total Acreage in Project Area
A1	Marsh	63.1
A2	Marsh	8.9
B	Pond	1.4
C	Seep	1.8
D	wet shrubland	11.0
E1	Floodplain forest	21.4
E2	Floodplain forest	5.3
E3	Floodplain forest	1.8
F	Shrubland	9.8
G1	upland forest	5.2
G2	upland forest	13.9
(No symbol)	Des Plaines River	9.9
(No symbol)	Developed land	19.2
	Total:	**172.7**

*Acreage in this table is calculated for land located between the Chicago Sanitary & Ship Canal and Bluff Road. Nearly all land between the canal and New Lemont Road is industrial land.

2.12.2 Wildlife

The project corridor contains a relatively wide variety of wildlife habitats. The most important occurs along the north side of the Des Plaines River Valley. Other areas occur along the tributaries of Long Run, Big Run, and Fiddyment Creek. Many wildlife species were observed during the biological studies performed for this project.

2.12.2.1 Birds

Bird populations that inhabit the majority of the FAP Route 340 project corridor are typical of representatives of avian communities that are associated with the respective cover or habitat types present. Due to the extensive clean-farming practices, urbanization, and industrialization that have occurred or are occurring within Cook, DuPage, and Will Counties, very little habitat diversity or suitable habitat remains available for use by native avifauna. The aggregate wetland associated with the Des Plaines River is by far the most interesting and important area with respect to bird species that occurs within the project corridor.

Seasonal dynamics of the project area were fairly typical with respect to numbers of species and numbers of individuals observed during each census period. The winter census period produced the lowest number of bird species observed in all habitat types and the spring migration census period produced the highest number of bird species (except in the agricultural habitat during the breeding census period).

Typically, the greatest numbers of bird species are recorded during the migration seasons. An interesting result, however, was that the number of bird species observed during the autumn census period was consistently lower for all habitat types than the number of bird species observed during the breeding census period (Malmborg, 1989).

The low results of the autumn census period may have been due partly to the weather patterns experienced during the autumn season. Temperatures fell quickly and stayed low, major frontal systems that are responsible for moving birds southward in waves were absent. Therefore, the progression of species through Illinois was irregular and sporadic. These results also may be an artifact of sampling due to the patchiness of the habitat types within the project area. The results suggest that the FAP Route 340 corridor or surrounding area was not used as an important migration corridor during the autumn of 1987 (Malmborg, 1989).

The habitat type richest in number of species in a particular season was the wetland habitat during the spring census period. The wetland habitat type within the project area consistently supported the greatest number of bird species (highest species richness) of any major habitat type in any season. The wetland habitat type also supported the greatest numbers of individuals during the breeding and spring census periods. Agricultural habitat attracted greater numbers of individuals during autumn and winter census periods, typically expected due to large flocks of blackbirds, crows, and rock doves associated with this habitat type during these seasons (Malmborg, 1989).

A low number of species and individuals have been recorded in the upland forest. The fragmented condition of the woodlands and lack of extensive woodlands within this region, and presence of brown-headed cowbirds are suggested as contributing factors to this phenomenon. During the spring census period the brown-headed cowbird was one of the most widely distributed bird species in this habitat type. Brown-headed cowbirds seek out nests of other bird species and lay one or more eggs in each. Brown-headed cowbird young have evolved to grow quickly and overpower the young of the host species. Therefore, numbers of many native bird species, especially neotropical migrants, are declining. The neotropical migrants have been shown to be especially vulnerable to nest parasitism. The neotropical birds present in the vicinity are listed in Patti Malmborg's 1989 study "An Assessment of Avian Populations within the FAP 431 Project Area, Cook DuPage, and Will Counties, Illinois". The presence of neotropicals along with the large number of brown-headed cowbirds in a fragmented upland forest area is indicative of a nest parasitism problem. Brown-headed cowbirds are common along forest edges, in fragmented forests, and in forests with open canopies. Preservation of extensive forested tracts is a practice which ultimately reduces nest parasitism and maintains non-game woodland bird species numbers and diversity (Malmborg, 1989).

The wetland habitats associated with the Des Plaines River within the FAP Route 340 project area provide important foraging habitat for waterfowl and wetland bird species during both the breeding and migration seasons. The Goose Lake heron colony was located within the project area during this study; it occurs just south of Goose Lake in Cook County. This colony is probably a may have been populated by recruitment from the Lake Renwick heron colony that is located near Plainfield, Will County, Illinois (Malmborg, 1990).

A total of 377 foraging observations were recorded during this investigation. Of these, 248 were of 4 heron species (Table 2-14). During this time period, herons appeared to concentrate in and around Goose Lake and around other open water areas and streams. However, scattered observations were recorded throughout the emergent wetlands (Malmborg, 1990). Since the Malmborg study, the state endangered black-crowned night heron and great egret have been spotted foraging in the Keepataw Forest Preserve wetlands.

One hundred fifteen foraging observations were recorded for seven waterfowl species during this study (Table 2-14). Waterfowl appeared to concentrate in open water areas when foraging (Exhibit 2-15). Many wood ducks and blue-winged teal were observed in wooded areas with open water (Malmborg, 1990).

Other species observed included: the state endangered osprey; the state threatened yellow-crowned night heron, pied-billed grebe, common moorhen, and king rail; and the uncommon sora, and Virginia rails. The grebes, osprey, and moorhen were observed in or around Goose Lake (Exhibit 2-15). The majority of rails were concentrated in relatively small emergent areas west along the power-line road at the intersection of the third stream. The king rail was observed much farther west (Malmborg, 1990).

The results of the survey indicate heron and waterfowl foraging is concentrated in specific areas, especially in and around Goose Lake and the streams and ponds where open water and emergent vegetation are present (Malmborg, 1990).

2.12.2.2 Mammals

Only small, terrestrial mammal species were found during field investigations in the project area. Most of the terrestrial small mammals known for northeastern Illinois could be found in the project area. High value habitat for most mammals in the project area occurs in the Des Plaines River Valley. Most Illinois furbearers, including mink (*Mustela vison*), muskrat (*Ondatra zibethicus*), raccoon (*Procyon lotor*), opossum (*Didelphis marsupialis*), red fox (*Vulpes fulva*), beaver (*Castor canadensis*), and striped skunk (*Mephitis mephitis*) are known to occur in the project area and evidence and sightings of raccoon, beaver, and muskrat have been recorded in the area between Bluff Road and the Des Plaines River.

Suitable habitat for deer along the project corridor is concentrated in the area north of the Des Plaines River and including the Keepataw Preserve and Black Partridge Forest Preserve. No numerical estimates of population in the area have been made; however, other information

suggests that this area supports a substantial deer population. South of the Valley, suitable deer habitat is limited and no forested areas are large enough to support over-wintering populations of deer.

Table 2-14
Total Number of Foraging Observations Recorded During a Survey of the FAP Route 340 Total Project Area Wetlands, Des Plaines River, Cook and Will Counties, Illinois[1/]

Heron Species	No.	Waterfowl Species	No.	Other Species	No.
Great blue heron	140	Wood duck	46	Pied-billed grebe**	7
Great egret**	53	Canada goose	10	Osprey*	1
Black-crowned n-h*	22	Mallard	30	King rail**	1
Green-backed heron	9	Blue-winged teal	24	Virginia rail	20
		Northern shoveler	5	Sora	8
		Ring-necked duck	1	Common moorhen**	1
		American coot	5		

* = state endangered species
** = state threatened species
[1/] Survey conducted between March 15, 1988 and December 1, 1989.

2.12.2.3 Reptiles and Amphibians

Five species of reptile (northern water snake, queen snake, brown snake, plains garter snake, and painted turtle) and six species of amphibians (tiger salamander, American toad, striped chorus frog, bullfrog, green frog and northern leopard frog) were located in the project area during field studies in 1988. Within the Keepataw Preserve the following eight species were identified: northern water snake (*Nerodia sipedon*), queen snake (*Regina septemvittata*), brown snake (*Storeria dekay*), painted turtle (*Chrysemys picta*), American toad, bullfrog (*Rana catesbeiana*), green frog (*Rana clamitans*), and northern leopard frog. Three other locations within the project area were identified as suitable habitat for reptiles and amphibians; wetlands southeast and south of the junction of 127th Street and Timberline Drive, wetlands on both sides of 167th Street near Gougar Road, and the upland pond north of Gordon Lane. The painted turtle, American toad, striped chorus frog, and green frog were all observed in the pond north of Gordon Lane. The plains garter snake (*Thamnophis radix*), tiger salamander (*Ambystoma tigrinum*), striped chorus frog, and northern leopard frog were observed in or near the wetlands near 127th Street and Timberline Drive. At the wetlands near Gougar Road and 167th Street, the American toad, striped chorus frog, and northern leopard frog were observed (Brown, 1988).

2.12.3 Threatened and Endangered Species

Studies to determine the possible occurrence of federal or state-listed threatened or endangered species within the FAP Route 340 project corridor were conducted by the Illinois Natural History Survey for fish, mussels, birds, bats and plants; the Illinois State University for amphibians and

reptiles (Brown, 1988) for spotted turtles (Stillwaugh and Mauger, 1990, 1991); and the Illinois State Museum for the Hine's emerald dragonfly (Cashatt et al., 1991). A discussion of these species follows. For additional information, refer to the Natural Resources Technical Report.

2.12.3.1 Federally-listed Species

The U.S. Fish and Wildlife Service Redbook lists the following species as occurring in Will, Cook and DuPage Counties:

· Indiana bat	Cook County, DuPage County, Will County
· Bald eagle	Will County
· Peregrine falcon	Cook County
· Piping plover	Cook County
· Prairie bush-clover	Cook County, DuPage County
· Lakeside daisy	Will County
· Eastern prairie fringed orchid	Cook County, DuPage County
· Leafy prairie clover	Will County
· Hine's emerald dragonfly	Will County, Cook County, DuPage County

Based upon the field surveys and habitats present, the project area is unsuitable for the Indiana bat, bald eagle, peregrine falcon, piping plover, prairie bush clover, lakeside daisy and the Eastern prairie fringed orchid. The leafy prairie clover occurs west of the FAP Route 340 alignment.

Leafy Prairie Clover (*Dalea foliosa*)

This federally and state endangered species occurs in dolomite prairie habitats. It has been observed at the nearby Lockport Prairie and Romeoville Prairie Nature Preserves on dolomite prairie complexes that border the Des Plaines River. A small, concentrated population (120 stems in approximately 43 square feet) was also discovered approximately 3,810 feet west of the recorded centerline of FAP Route 340 alignment.

Hine's Emerald Dragonfly (*Somatochlora hineana*)

This species is listed as a federal endangered species as published in the January 26, 1995 Federal Register and also a state endangered species.

Historically this dragonfly has been reported only in Ohio and Indiana. Recent investigations, however, indicate that the species has apparently been extirpated from historical sites in Ohio and that its status in Indiana is uncertain. The first Illinois specimen of Hine's emerald dragonfly (*S. hineana*) was collected in July 1983 at Lockport Prairie Nature Preserve in Will County and identified in 1987. In 1990 a study sponsored by the U.S. Fish and Wildlife Service (Cashatt, Sims, and Wiker, 1990) found populations of this species at only five locations within 0.9 mile of the Des Plaines River and within a 5.4 mile radius of each other.

The largest population and confirmed breeding population occurs on the Lockport Prairie Nature Preserve approximately 6.5 miles southwest of the FAP Route 340 Des Plaines River crossing. Other locations include Long Run Seep Nature Preserve (6.5 miles to the southwest), Romeoville Prairie Nature Preserve (about 2.7 miles west, southwest) including an individual seen 400 to 500 feet south of 135th Street, Black Partridge Forest Preserve (about 1 mile east), and Waterfall Glen Forest Preserve (about 1.9 miles east). In addition, the dragonfly has been found at two additional locations: in McMahon Woods Forest Preserve in Cook County 8 miles east of FAP Route 340 and on a privately owned site 2 miles west of the alignment. Although the seven sites are within 15 miles of each other, it is not known how the dragonflies are dispersing in the valley. Six other populations have been located in Door County, Wisconsin (Vogt and Cashatt, 1994)

In Illinois, Cashatt and Vogt (1990) surveyed 28 potential sites including the Keepataw Forest Preserve. They did not observe any Hine's emerald dragonflies within the Forest Preserve. No individuals were found within or adjacent to the FAP Route 340 alignment. The alignment of FAP Route 340 does not contain breeding habitat because nearby waters are too deep, stagnant, silt-laden and are seasonally inundated by the Des Plaines River. One male dragonfly was observed just south of Bluff Road and approximately 0.6 miles east of the highway alignment at Black Partridge Forest Preserve (Identified on Exhibit 2-15).

The Hine's emerald dragonfly requires shallow, calcareous, seepage marshes or the marshy margins of small, sluggish, calcareous streams. The seepage marshes are usually dominated by cattail and can be broadly defined as fens (any minerotrophic peatland or mire) or fenlike communities. Shallow soils, including mucks, overlie dolomitic bedrock. Bedrock is occasionally exposed at the surface. Because these wetlands are spring fed, water temperature fluctuations are minor (Vogt and Cashatt, 1994). Habitat requirements for growth and reproduction are different from habitat requirements of non-reproductive adults. Appropriate habitat for eggs and nymphs in Illinois is shallow, calcareous seepage marshes or small streams with high water quality. Calcium, magnesium, and hardness levels are high in waters from *S. hineana* breeding sites in comparison to other natural waters. The eggs of the Hine's emerald dragonfly are probably deposited in water or on wet sand, mud, or moss at the water's edge. Cashatt, et al. (1991) observed a female ovipositing

in a shallow stream. Females were observed in Illinois and Wisconsin with mud on their terminal abdominal segments suggesting that eggs were laid in shallow water, soft muck, or both (Vogt and Cashatt, 1994). The aquatic larval stage probably lasts three years, after which adults emerge and live for 4 to 5 weeks (Herkert, 1992). In the Des Plaines River area, adults emerge as early as late May and continue to emerge as late as mid-July (Cashatt et al., 1991).

In the FAP Route 340 project area, habitat for larvae consists of small, shallow, slow moving, spring fed streams originating from dolomite limestone bluffs along the Des Plaines River floodplain. Two locations depicted on Exhibit 2-15 represent areas identified by Cashatt where breeding could occur. One additional area (C1 on Exhibit 2-15) potentially could be used for breeding; however, management of the area would be required.

Other marshes (labeled A1 on Exhibit 2-15) existing in the project area are deeper and contaminated by surface waters and silts. These wetland areas (labeled A1 on Exhibit 2-15) are all inappropriate breeding grounds for the Hine's emerald dragonfly Cashatt et al reported in 1991 that the marshes in the vicinity could be foraging habitat. However, no foraging observations have been made in the corridor area, although several attempts were made to locate foraging adults in the FAP Route 340 corridor. The corridor is several kilometers from any known breeding site. Conclusive evidence on the foraging potential of the adjacent marshes is not yet available. If the marshes are determined in the future to be suitable foraging habitat, foraging habitat does not appear to be a limiting factor for dragonflies.

In general, dragonflies are opportunistic feeders that eat any insect caught. Thus, food sources could include caddisflies, moths, midges, and other flies, damselflies, and smaller dragonflies. Dragonflies feed soon after emerging and continue throughout their lifetime. Adults are known to capture and feed on the wing (INHS, 1994).

Flight behavior of the adult dragonfly is dependent on age, time of day, weather and the situation. With regard to age, the adult stage may be divided into three phases: 1) pre-reproductive, 2) reproductive, and 3) post-productive. During the pre-productive phase, the dragonfly may wander 0.60 to 1.9 miles away from the emergence sites. Breeding sites and territories are established in the reproductive phase. During this phase, they may range out for 0.60 to 1.2 miles from the selected breeding area to feed, but return for mating and oviposition. Feeding patrols are longer in this phase (15 to 30 minutes) and may extend over a 164 to 320 feet area in meadows and along edges at a height of 3 to 13 feet in early morning and late evening. At times, the dragonfly feeds on swarms of gnats or midges which may range from 16 to 23 feet above the ground or water. Under hot mid-day temperatures (35 to 40°C), adults have been observed perching high in treetops (up to 50 feet) out of direct sunlight. During the post-reproductive phase, the dragonflies stray away from the breeding grounds and exhibit feeding behavior and flight behavior similar to that of the pre-productive phase. During all phases, this species has been seen flying near breeding sites at a height of about 3 to 66 feet over paved and unpaved roads (Cashatt, Sims, and Wiker 1991). Most observations have identified the heights ranging from 3 to 6 feet for feeding behavior, 1 to 6 feet for territorial behavior, and 18 to 24 feet for copulatory behavior (Vogt and Cashatt, 1994).

A study of the Hine's emerald dragonfly is being conducted (see Section 4.11.3.1). A preconstruction study of adult activity was published by Daniel A. Soluk and Brian Swisher in September 1995 as "The Ecology of Hine's Emerald Dragonfly (*Somatochlora hineana*): Monitoring Populations and Determining Patterns of Habitat Use in the Des Plaines River Valley". Studies of the behavior of adult Hine's emerald dragonflies were initiated in late June 1995. The intent was to begin an assessment of how adult Hine's emerald dragonflies respond to existing roadways with the goal of developing an understanding of how this species might be affected by modification of traffic flow patterns and the construction of new roadways in the Des Plaines River Valley. In addition, direct mortality of dragonflies caused by roadways was evaluated, and surveys of the preferred alignment for FAP Route 340 were conducted to evaluate the extent to which this area and adjacent areas in the Black Partridge and Keepataw Forest Preserves are currently being used by adult Hine's emerald dragonflies.

Behavior of adult Hine's emerald dragonflies and other adult dragonflies while near or over existing roadways was assessed at five sites in the Des Plaines River Valley, four along roadways and one at a bridge. The road sites included: Division Street within Lockport Prairie Nature Preserve, Romeo Road adjacent to Romeoville Nature Preserve, New Avenue along Long Run Seep, and the Illinois Route 7 westside approach to the Lockport bridge.

At three of the roadway sites a total of 54 separate observations were reported for approximately 27 individual adult Hine's emerald dragonflies. Adult Hine's emerald dragonflies are strong fliers that appear to spend only a relatively short time, approximately 3 seconds, over the roadway where they might be vulnerable to collisions with motor vehicles. Of the five individuals were observed at the bridge, two were seen to fly underneath the Lockport bridge from south to north while the other three flew parallel to the bridge. None were observed to fly over the bridge. Estimated flight height over the roadway ranged from 3 to 30 feet with 77% of all observed heights being greater than 5 feet above the ground and 53% in the 6 to 10 foot range. At heights above 5 feet, Hine's emerald dragonflies would likely avoid most vehicles except for larger trucks, buses and recreational vehicles.

A total of 58 roadside surveys for dead dragonflies were conducted in July and August, 1995. No Hine's emerald dragonflies were ever found either during the survey or in the process of clearing the roadway to initiate the surveys. It is not known how the number of road kills collected relates to total mortality of adult dragonflies since some proportion of victims are carried off on the grill, radiator, or windscreens of the vehicles they have collided with, or alternatively they may be carried by vehicle turbulence farther from the roadway than could be effectively surveyed.

One Hine's emerald dragonfly was observed during timed quantitative observations along FAP Route 340 alignment in the Keepataw Forest Preserve. During the extended

observation periods along the alignment, four confirmed sightings of the Hine's emerald dragonfly were made.

Two Hine's emerald dragonflies were observed during formal observation and one individual was seen incidentally in the vicinity of the seeps along the bluffs in the Keepataw Forest Preserve. All of these observations were made in two sedge meadows associated with the seeps in the western end of the Keepataw Forest approximately 1,800 feet west of the FAP Route 340 alignment. The dragonflies were observed to fly in patterns typical of territorial patrols. No breeding activity such as ovipositing was observed nor is it known whether the Hine's emerald dragonfly can successfully breed in these locations. The placement of FAP Route 340 is not expected to affect the use of the seep sites by the dragonflies. Evidence from the observations made at the Lockport bridge suggest elevated roadways and structures adjacent to known breeding habitats (Lockport Prairie Nature Preserve) do not appear to inhibit dragonfly activity.

2.12.3.2 State-listed Species

The Illinois Endangered Species Protection Board lists a total of 217 threatened and endangered plant and animal species as potentially occurring in Cook, DuPage and Will Counties. Based upon the habitats present, the following species were found to occur in the FAP Route 340 project area: spotted turtle, great egret, **king rail,** black-crowned night heron, double-crested cormorants, pied-billed grebe, common moorhen, osprey, brown creeper, cooper's hawk, northern harrier, Hine's emerald dragonfly, white lady's slipper, slender sandwort, and sedge (*Carex crawei*). Note: *Carex atherodes* has been delisted.

The sedge species, *Carex crawei*, was observed approximately 1,200 feet west of the alignment, while the slender sandwort occurred as close as 500 feet from the centerline. The spotted turtle was observed within 2 miles of the project corridor. The species white lady's slipper occurs 3000 feet east of the FAP Route 340 alignment. The foraging areas for the great egret, black-crowned night heron, and double-crested cormorants, pied-billed grebe, and common moorhen are centered around Goose Lake.

Reptiles

Spotted Turtle (*Clemmys guttata*)

The spotted turtle, listed as endangered in Illinois, is most frequently found in marshy pastures and bogs, but it also occurs in swamps, small ponds, ditches, and woodland streams. Two extant populations of this turtle have been observed along the Des Plaines River Valley near Lockport, 2 miles west of the project corridor. A third population is located just west of the Keepataw Forest Preserve (Exhibit 2-15) within 1 mile of the FAP Route 340 alignment (Stillwaugh and Mauger, 1990, 1991). A radiotelemetry study conducted during 1991 reported that no spotted turtles were observed in the project corridor. The study also concluded that wetland habitat within the alignment is unsuitable to marginal for supporting populations of spotted turtles.

Blandings Turtle *(Emydoidea blandingi)*

The Blandings turtle, a Category II species and a state watch listed species, occurs in the wetland complex area bounded by Lemont Road to the east, 2.5 miles west of Lemont Road to the west, the Des Plaines River to the south, and Bluff Road to the north. The U.S. Fish and Wildlife Service believes that the Blandings turtle may have potential to be listed as a threatened or endangered species, and that additional research by others is encouraged. Fourteen observations were made in a two month period in 1990 (Stillwaugh and Mauger, 1990). No Blandings turtles were found in the project corridor, however.

Colonial Birds

Great Egret (*Casmerodius albus*)

This state threatened bird utilizes marshes, sloughs, and lakes for foraging, while nesting habitat for colonies usually consists of floodplain forests and shrub thickets. Great egrets nest annually at Lake Renwick, 10 miles west of the project area, and have been observed foraging in the wetlands adjacent to the Des Plaines River. The foraging areas are centered around Goose Lake and extend westward into the project corridor (Exhibit 2-15). It is assumed that most of these foraging birds are from the Lake Renwick colony (Malmborg, 1989, 1990).

Black-crowned Night Heron (*Nycticorax nycticorax*)

This bird species, which is listed as endangered in Illinois, forages in marshes and along streams and pond shores. Nesting occurs in colonies usually located in floodplain forest that are isolated from disturbance. The species nests annually at Lake Renwick, 10 miles west of the project area, and has been observed foraging in the wetlands adjacent to the Des Plaines River. The foraging areas are centered around Goose Lake and extend westward, including the FAP Route 340 project corridor (Exhibit 2-15). It is assumed that these foraging individuals are from the Lake Renwick heron colony (Malmborg, 1989, 1990).

Yellow-crowned Night Heron *(Nyctanassa violacea)*

The yellow-crowned night heron is a state-listed threatened species. Breeding occurs in wooded situations near water with habitat being marshes, swamps, lakes, and lagoons. Nesting is not known to occur in the area. Only two observations of this heron have been made in the area. The birds observed are likely to have been migrants flying over.

Double-crested Cormorants (*Phalacrocorax auritus*)

This state threatened species forages in the open water of lakes and rivers and nests in trees adjacent to water. Double-crested cormorants nest annually at Lake Renwick, 10 miles west of the project area, and have been observed foraging in the wetlands adjacent to the Des Plaines River. The

foraging areas are centered around Goose Lake and extend westward, including the FAP Route 340 project corridor. It is assumed that these foraging birds are from the Lake Renwick colony (Malmborg, 1989, 1990).

Pied-billed Grebe (*Podilymbus podiceps*)

This species, listed as threatened in Illinois, breeds in emergent vegetation around shallow ponds and its diet consists of plant seeds, aquatic insects, snails, and leeches. Nests are composed of decaying vegetation which is brought up from the bottom of shallow ponds and piled on a platform of aquatic plants. Pied-billed grebes have been observed foraging in the wetlands surrounding Goose Lake but were not observed along the **preferred** alignment during a 1989 survey (Malmborg, 1989).

Common Moorhen (*Gallinula chloropus*)

The common moorhen is listed as threatened in Illinois. The nesting habitat for this bird is wetlands with an interspersion of open water and emergent vegetation and with water depths of 3 to 5 feet. It forages in most types of emergent wetlands. The common moorhen was observed once in and around Goose Lake (Malmborg, 1989).

King Rail *(Rallus elegans)*

This species is listed as threatened in Illinois. The habitat for this species is fresh-water marshes. Formerly a common summer resident throughout the State, one foraging observation has been made in the general area (Malmborg, 1990).

Forest Dwelling Birds

Osprey (*Pandion haliaetus*)

The osprey, listed as endangered in Illinois, is more common on sea coasts, but occurs also on large inland lakes and major rivers. The species eats fish exclusively and nests in trees or on the ground. An osprey was observed once in and around Goose Lake, but it is unlikely that this species either nests or forages extensively in the project area (Malmborg, 1989).

Brown Creeper (*Certhia americana*)

The brown creeper is listed as threatened in Illinois. The species' nesting habitat is floodplain forests containing dead or dying trees with exfoliating bark. Brown creepers are winter residents in most of Illinois, and they have been observed in the upland forest of the Black Partridge Nature Preserve during autumn and winter field surveys (Malmborg, 1989).

Cooper's Hawk (*Accipiter cooperii*)

The Cooper's hawk is listed as endangered in Illinois, and its preferred breeding and foraging habitat is forest interspersed with fields and shrubland. The species nests in a variety of habitats from forest interiors to single trees. A Cooper's hawk was observed in a young woodlot surrounded by agricultural land just south of Spring Creek during the winter census (Malmborg, 1989). However, there is no evidence that this species breeds within the project corridor.

Northern Harrier (*Circus cyaneus*)

Suitable nesting for this state endangered species includes moist, rank vegetation, emergent vegetation, or mat vegetation at marsh edges, all of which occur along the Des Plaines River in the project area. A northern harrier was observed foraging over a forbland near Spring Creek during an autumn field survey; however, there is no evidence that the species breeds within the project corridor (Malmborg, 1989).

Plants

White Lady's Slipper (*Cypripedium candidum*)

This plant species is listed as endangered in Illinois. A population of white lady's slipper occurs just northwest of Goose Lake, approximately 3,000 feet east of the FAP Route 340 alignment. A total of 170 ramets were observed scattered throughout the western half of an approximately 10 acre calcareous fen owned by the Forest Preserve District of Cook County (Taft, 1989).

Slender Sandwort (*Arenaria patula*)

This plant is listed as endangered in Illinois, and 9 separate populations have been mapped in and near the FAP Route 340 project corridor (Taft, 1989). These populations all occur on dolomite glade habitat created or enlarged by the quarrying of flagstone on the terrace of the Des Plaines River. Population size ranged from 8 plants at site e to several thousand at site i (Exhibit 2-15). The population at site a is within 500 feet of the centerline, and the other populations are much further from the alignment (at least 1,600 feet).

Sedge (*Carex crawei*)

This species is listed as threatened in Illinois. One population composed of approximately 705 individuals was found at the base of a bluff within the calcareous seep/wet-mesic dolomite prairie of the Keepataw Forest Preserve (Exhibit 2-15), approximately 1200 feet west of the alignment. This sedge was also discovered at another location approximately 3000 feet west of the alignment (Taft, 1989).

2.13 Air Quality

2.13.1 Summary of Air Quality

The FAP Route 340 study area is located within the Chicago metropolitan area. This area (which includes the Counties of McHenry, Kane, Kendall, Grundy, Lake, Cook, DuPage, and Will) is subject to the National Ambient Air Quality Standards (NAAQS) and the Illinois Ambient Air Quality Standards. These standards are shown in Table 2-15. The primary standards are established at levels which are intended to protect the public health. Secondary standards are required to protect the public welfare from any known or anticipated adverse effects of a pollutant.

In addition to the establishment of primary and secondary standards, the State of Illinois has developed a State Implementation Plan (SIP) for air pollution control in Illinois. Part of the planning action involved with the SIP was the identification of attainment and non-attainment areas.

The Counties of Cook, DuPage, Grundy (part), Kane, Kendall (part), Lake, McHenry, and Will have been classified as severe ozone nonattainment areas by **United States Environmental Protection Agency (**USEPA**)**. A severe classification means that the region should implement specific programs, such as Transportation Control Measures (TCM), to attain air quality standards, and that a plan be prepared for attaining ozone air quality standards by the year 2007.

In addition to the TCM and SIP requirements, metropolitan planning organizations (MPO) and the United States Department of Transportation (DOT) are required to undertake conformity determinations on metropolitan transportation plans and transportation improvement programs before they are adopted, approved, or accepted. In addition, highway or transit projects which are funded or approved by the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA) must be included in a conformity plan and **Transportation Improvement Program (**TIP**)** before they are approved or funded by DOT or an MPO.

Section 176 (c)(4) of the Clean Air Act Amendments of 1990 requires that transportation plans, programs, and projects which are funded or approved under Title 23 U.S.C. must be determined to conform with State or Federal air implementation plans. Conformity to an implementation plan is defined in the Clean Air Act as conformity to an implementation plan's purpose of eliminating or reducing the severity and number of violations of the national air quality standards and achieving

expeditious attainment of such standards. The implementing regulations for determining conformity of transportation projects are found in 40 CFR Part 93, "Criteria and Procedures for Determining Conformity to State or Federal Implementation Plans of Transportation Plans, Programs and Projects Funded or Approved Under Title 23 U.S.C. or the Federal Transit Act".

Ambient air quality is monitored at over 50 locations in the region. Instrumentation used at each site varies. However, all six criteria pollutants are monitored at one or more locations. The results of the monitoring are summarized and published annually by the **Illinois Environmental Protection Agency (**IEPA**)**.

Existing air quality within the FAP Route 340 study area, as defined by monitoring data is available at five locations as listed in Table 2-16 with the owner/operator and the pollutants measured at each site. Table 2-17 is a summary of existing air quality in the FAP Route 340 project area.

Particulate Matter less than 10 micrometers (PM_{10}), represents the fraction of Total Suspended Particles (TSP) with a particle size of less than 10 micrometers. In 1994, no sites exceeded the Primary Annual Standard of 50 ug/m^3 in Illinois. The two measurement sites within the corridor recorded no exceedances of the 24-hour PM_{10} Primary Standard of 150 ug/m^3, although McCook, Illinois had three exceedances (see Table 2-17).

In 1994 there were two ozone exceedance days in the Chicago metropolitan area. Seven sites recorded concentrations above the 1-hour standard of 0.12 ppm (see Table 2-17). There was one exceedance of the 8-hour carbon monoxide standard recorded in Maywood.

The Chicago area, including the project area, is in a severe ozone non-attainment area. Ozone is a colorless gas with a pungent odor and is associated with smog or haze conditions. Ozone is not a direct emission from transportation sources. It is a secondary pollutant formed when precursor emissions, hydrocarbons and nitrogen oxides, react in the presence of sunlight. Because of these complex relationships, understanding and controlling ozone formation requires factoring all hydrocarbon and oxides of nitrogen emissions within the region and thus, contributions from individual projects or facilities may not be observed in the immediate project area.

To understand the ozone problem on a regional scale, and to guide the state in the development of ozone control strategies for the Chicago area, a Lake Michigan Ozone Study has been initiated. The purpose of this study is to investigate the formation and transport of smog within the Lake Michigan airshed. The ozone study area encompasses the four Lake Michigan states: Illinois, Wisconsin, Michigan, and Indiana, and is being conducted in cooperation with USEPA. The study will attempt to look at the regional ozone formation and transport for the Lake Michigan region. Various models, such as USEPA's Regional Oxidant Model are being used to evaluate the efforts of long range transport of ozone.

The SIP also defines the process by which pollution control goals will be achieved. Included in the SIP is a Transportation Control Plan (TCP), which is a transportation management improvement program designed to minimize the emissions from transportation sources. Projects involved in the

transportation improvement program for the region are screened under the guidance of the Illinois Environmental Protection Agency (IEPA) to assure their conformance with the SIP. The air quality analysis for FAP Route 340 is in Section 4.12.

2.13.2 Pollutant Standards Index

The Pollutant Standards Index (PSI) is the national standard method for reporting air pollution levels to the general public. The PSI is based on the short-term Federal National Ambient Air Quality Standards (NAAQS), the Federal episode criteria, and the Federal Significant Harm levels for five of the "criteria pollutants", namely, Ozone (0_3), Sulfur Dioxide (SO_2), Carbon Monoxide (CO), Particulate Matter (PM_{10}), and Nitrogen Dioxide (NO_2). The various PSI levels have been divided into five categories, "Good", below 50; "Moderate", PSI range of 51-100; "Unhealthful", between 101-199; "Very Unhealthful", between 200-299; and "Hazardous", above 300.

Unhealthful air quality is uncommon in Illinois, and Very Unhealthful air quality is rare. No instance of Hazardous air quality has occurred in Illinois.

The Illinois Environmental Protection Agency (IEPA) issues the PSI for 11 areas, or Sectors, in Illinois. The areas correspond to metropolitan areas with population greater than 200,000. There are seven Sectors in the northeastern part of the state including Will County/Joliet which roughly includes an area with a 5- to 10-mile radius of Joliet. In 199**4**, the latest year data is available, all sectors except Metro-East (Illinois part of the St. Louis Metropolitan Area) had 80% or more days in the "Good" category. The Joliet/Will County Sector had over 90% or more days in the "Good" category.

Table 2-15
Summary of National and State Ambient Air Quality Standards

Pollutant	Averaging Time	Standard (@25°C and 760 mm Hg)	
		Primary	**Secondary**
Particulate Matter, 10 micrometers (PM_{10})	Annual Arithmetic Mean	50 ug/m^3	Same as Primary
	24-Hour	150 ug/m^3	Same as Primary
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	0.03 ppm (80 ug/m^3)	None
	24-Hour	0.14 ppm (365 ug/m^3)	None
	3-Hour	None	0.5 ppm (1300 ug/m^3)
Carbon Monoxide (CO)	8-Hour	9 ppm (10 mg/m^3)	Same as Primary
	1-Hour	35 ppm (40 mg/m^3)	Same as Primary
Ozone (O_3)	1-Hour/Day	0.12 ppm (235 ug/m^3)	Same as Primary
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.053 ppm (100 ug/m^3)	Same as Primary
Lead (Pb)	Quarterly Arithmetic Mean	1.5 ug/m^3	Same as Primary

Note: All standards with averaging times of 24 hours or less are not to have more than one actual or expected exceedance per year.

Table 2-16
Air Quality Monitoring Sites
In The FAP Route 340 Project Area

Monitoring Location	Owner/Operator	Air Monitor Network	Pollutant Monitored
Cook County			
Lemont - 729 Houston	Cook County Department of Environmental Control	SLAMS	SO_2, O_3
DuPage County			
Naperville - 400 S. Eagle Street	Illinois EPA and DuPage County Health Department	SLAMS	PM_{10}
Will County			
Joliet - Midland and Campbell	Illinois EPA	SPMS, NAMS, SLAMS	TSP, PM_{10}, Pb
Joliet - Route 6 and Young Road	Illinois EPA	NAMS, SPMS	SO_2, Wind speed/direction
South Lockport - 2021 Lawrence	Illinois EPA	SLAMS	O_3

Source: 1994 Illinois Annual Air Quality Report.

Notes: 1) Indicates air monitoring stations.
SLAMS - State/Local Monitoring Station
NAMS - National Air Monitoring Station
SPMS - Special Purpose Monitoring Station

2) Pollutants monitored include the following:
TSP - Total Suspended Particulates
PM_{10} - Particulate Matter (10 microns or smaller)
Pb - Lead
SO_2 - Sulfur Dioxide
NO - Nitric Oxide
NO_2 - Nitrogen Dioxide
O_3-Ozone

Table 2-17
Existing Air Quality In The FAP Route 340 Project Area

Pollutant Name	Status (1994)
PM_{10}	The primary annual standard for PM_{10} was not exceeded in the project area. The 24-hour standard was exceeded three times in McCook, Illinois on August 27: 162 ug/m^3, September 15; 179 ug/m^3 and October 28; 193 ug/m^3.
Ozone	There were two ozone exceedance days within the region. On June 16, 1994 the ozone standard was exceeded in Deerfield; 126 ppb, Libertyville; 128 ppb, Waukegan; 126 ppb, and Zion; 132 ppb, and on June 18 ozone was exceeded in Elgin; 127 ppb, Lemont; 169 ppb, and South Lockport; 130 ppb.
Sulfur Dioxide	There were no exceedances of the annual, 24-hour, or 3-hour standards recorded in the project area in 1994.
Nitrogen Dioxide	There have been no violations of the annual primary since 1980 in Illinois.
Lead	There were no violations of the quarterly primary standard recorded in the region.
Carbon Monoxide	There was one exceedance of the 8-hour primary standard recorded in Maywood, Illinois on December 22; 9.7 ppm.

Source: 1994 Illinois Annual Air Quality Report.

2.14 Noise

Existing noise was measured at 45 typical receptor sites throughout the project corridor. These sites include isolated farmhouses, scattered clusters of residences, subdivisions, churches, and parks, located along the **preferred** alignment. Refer to Exhibit 2-16, location of noise sensitive receptors in the project area. The Federal Highway Administration has set a limit on traffic-related noise levels, above which, abatement must be considered. These noise limits are called the noise abatement criteria (NAC). These limits vary based on the types of activities common to a particular site.

The project lies in areas which have an NAC of approaching 67 dB(A). Approaching is identified as 1 dB(A) less than the NAC. In this instance, 66 dB(A) is the approach criteria. Any noise level of 66 dB(A) or greater will be investigated for mitigation. Existing noise levels throughout the project area average 10 to 20 dB(A) lower than the NAC (see Table 4-13 in Section 4.13 for more detail). This is due, in part, to the urbanizing nature of the project area.

The sites with higher existing levels are located along busy streets or intersections. Three sites approach or exceed the 67 dB(A) NAC within the existing condition. One of these sites are near Interstate Route 55, and two are near Interstate Route 80 (see Table 4-14 in Section 4.13).

The noise analysis for FAP Route 340 is in Section 4.13.

2.15 Solid Waste and Hazardous Substances

Approximately one-half mile east of the recorded centerline at 110 W. 127th Street, Lemont, is the former Briedes Paint Company which is listed on the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) site/event list. Surface drainage and estimated groundwater flow are to the east, away from the project. The U. S. **Department of Energy (**DOE**)** Argonne National Laboratory at 9700 S. Cass Avenue is also on the CERCLIS list. This site is located approximately three miles east of the recorded centerline.

At Ham, Tug and Fleeting, a tug facility located between the Des Plaines River and the Sanitary and Ship Canal, approximately 100 55-gallon drums were standing on exposed, oil-stained bedrock. All drums were labeled "motor oil" or "hydraulic oil". Also present were two unlabeled above-ground storage tanks. Several hundred feet south were five more barrels marked "Drew Chemical Company". According to the owner, chemicals are transported on barges, but no chemicals are stored at the Ham, Tug, and Fleeting facilities.

Approximately 400 feet west of Ham, Tug, and Fleeting and 30 yards south of the Des Plaines River, fifteen to twenty drums have been discarded down a hill. Most of the drums have a 55 gallon capacity, but smaller drums are also present. All appear empty and are rusted. In addition to the drums, an unknown substance that looks like hardened foam rubber is scattered around the site. To the east, approximately 100 feet, are more drums, some marked "UpJohn Chemical/Plastic." Adjacent to the drums is a hillside area covered with discarded boards, hoses, ropes, and metal. All material appears weathered and/or rusted.

Across the Sanitary and Ship Canal, Thomas Steel is located southwest of Ham, Tug, and Fleeting. FAP Route 340 passes through the steel scrap yards east of the furnaces. Thomas Steel keeps four to five 15-gallon carboys of sulfuric acid on the premises for pH control, according to Mr. Nemanich, environmental officer for Thomas Steel.

A Preliminary Environmental Site Assessment was conducted by the Illinois State Geological Survey to assess the project area for hazardous wastes (Frantz, 1991). Testing for volatile organic compounds (VOCs) using an organic vapor analyzer (OVA) was conducted at five locations along FAP Route 340. No VOCs were detected at any of the sites. Exhibit 2-17 shows VOC testing locations.

2.16 Visual Resources

The visual resources of the FAP Route 340 corridor include forested areas, streams and the Des Plaines River Valley. The primary forested areas include the Keepataw and Black Partridge Forest Preserves and Lemont Woods **(Wood Ridge Forest Preserve)**. The streams include: Spring Creek, Fraction Run, Fiddyment Creek, Big Run, Long Run, Black Partridge Creek, and Hickory

Creek. The Des Plaines River Valley is slightly more than a mile from bluff to bluff and provides the most interesting viewshed.

Within the valley are a variety of components including: two roadways, two railroads, forest preserves, two canals, some canal transfer facilities, the Des Plaines River, residences, Commonwealth Edison high voltage lines, and heavy industry including oil storage tanks. The Valley is crossed in several locations by roadways on bridges, the nearest being Lemont Road 7,700 feet to the east. Different visual reference points provide different viewing opportunities. If the viewer is located on the valley floor south of the Sanitary and Ship Canal, the view is primarily industrial in nature, while a viewer within the forest preserves would see a natural setting with abundant vegetation. Vistas are available from either the north or south bluff. These views, depending on season and orientation, give the best opportunity to see the different components of the valley. The views from the north bluff in Keepataw Forest Preserve show the resources of the preserve including the forested tracts and wetlands.

2.17 Utilities

Several different types of utilities occur within the project area. They range from electric, oil, and gas transmission and distribution lines to water supplies and a wastewater treatment plant. The major utilities such as transmission lines and water supplies and treatment have been included for analysis. Electric, telephone, cable, and gas distribution lines will not be considered in this document as they are typically smaller in size, easily relocated, and located within the public right of way. The major utilities are shown on Exhibit 2-18.

The transmission lines occur both above ground and below ground. The above ground transmission lines are Commonwealth Edison high voltage power lines. Four separate high voltage line crossings occur in the FAP Route 340 corridor. Each of the crossings is actually two separate circuits, so the towers are in pairs. Impacts to these lines could occur if the FAP Route 340 alignment causes a tower to be relocated or if the lines need to be raised because of vertical proximity. The voltages of the lines vary, but typically they are either 138 Kv or 345 Kv. The tower size at the base is about 20 feet by 20 feet. A service road is typically located between the towers and is used for inspection and minor maintenance. Underground transmission lines typically are large pipes with natural gas or oil products flowing under pressure. Impacts to these pipelines occur primarily due to vertical proximity. Even if the pipes are not directly impacted, they still may need to be encased or strengthened due to the stress of the overburden placed for pavements.

Two of the seven groundwater wells which serve Joliet are located within 2000 feet of the right-of-way of the recorded alignment. Joliet is studying the Kankakee River as a potential source of drinking water. If Joliet decides to take its drinking water from the river, these seven wells will not be abandoned, but be used as backup supplies. These wellfields are discussed in the groundwater resources section (Section 2.11.1)

A Citizens Utility elevated water tank is located east of the recorded centerline, south of the terminus with Interstate Route 55. A Citizens Utility wastewater treatment plant is within the

immediate vicinity of the recorded alignment. It is east of the centerline just south of Davey Road and serves local needs.

It is likely that other utilities will be planned in the area. The possibility of conveying Lake Michigan water to portions of Homer Township and Will County is being explored by local communities. The Village of Lemont has a proposal to install a deep well and reservoir adjacent to the east right-of-way line, approximately 1400 feet south of 127th Street. Sanitary sewers may be installed if development continues. **In the future, a 24" diameter intercepting storm sewer is planned parallel to 135th Street. Currently, there is no funding for this sewer.** Coordination of any utility to be installed in the vicinity of the FAP Route 340 corridor will continue with local agencies. The proper placement of a buried transmission line will save relocation costs and possible interruption of service.